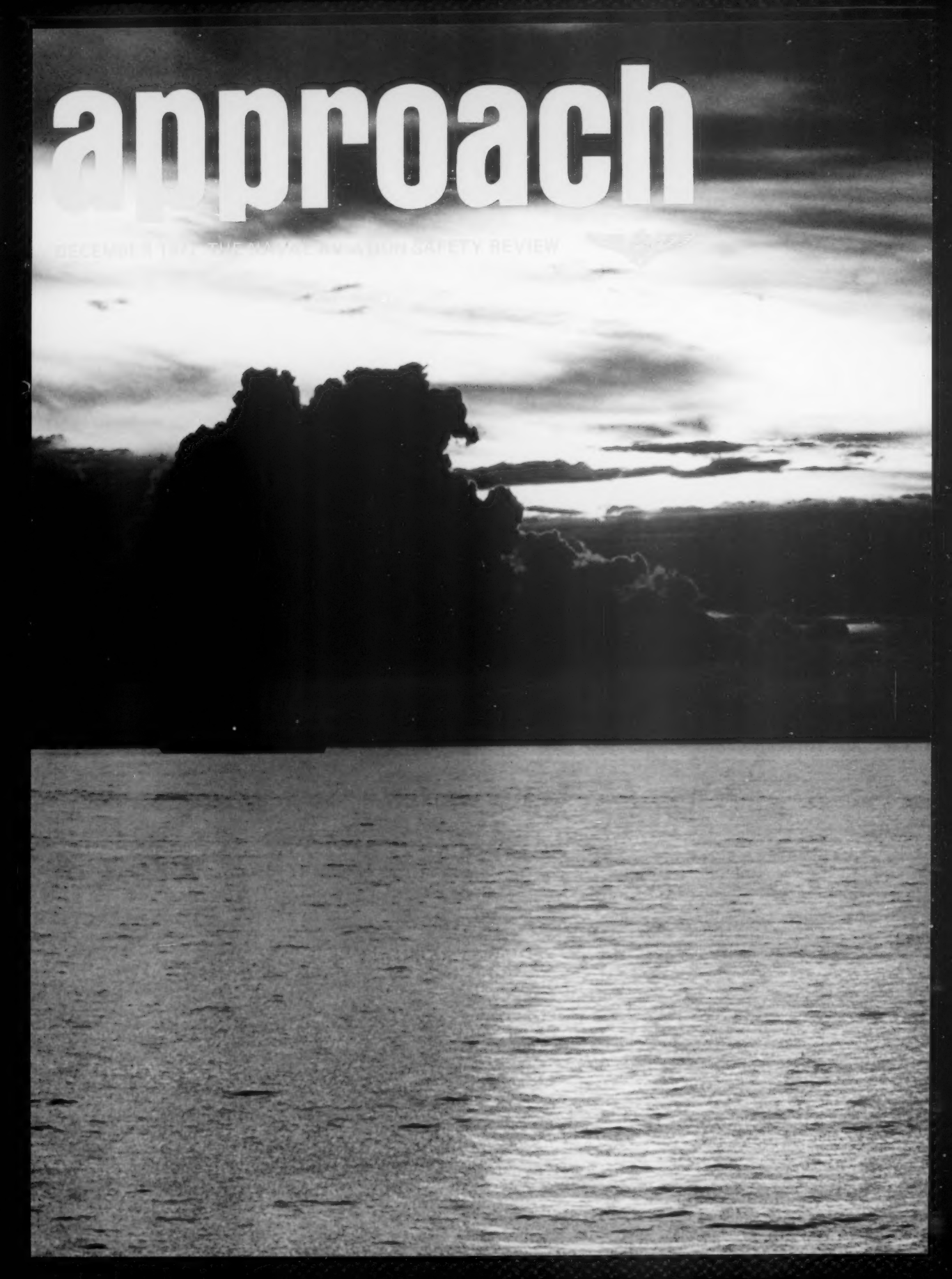
approach

*On 10 December 1976, I was forced to eject from my A-4E approximately 30 miles at sea off the coast of North Carolina. After the ejection, I felt the worst was behind me. Based on my survival training, I felt I knew all there was to know about water survival. I was confident all I would have to do was broadcast my position on Guard and then wait for the SAR helo to rescue me. How wrong I was!*

*The following account of my experience is intended not as a survival lecture, but rather as food for thought. Because every survival situation has its own peculiarities, it would be impossible for any training film or lecture to depict every situation that might arise. The purpose of this article is to stimulate you pilots and NFOs into thinking what you would do if confronted with a similar cold water survival situation.*

# Down in the cold Atlantic

By LT Jerome L. Petykowski
VC-2

I WAS scheduled as a backup target tow on a routine air-to-air missile firing exercise. Unless my services were needed, all I would have to do was fly up and down the coast in a standby status. So, early that morning as I dressed for the event, I toyed with the idea of not wearing the bulky, restrictive CWU-33/P ventilated wet suit. The last few days had been warm for December, and although the water temperature was 50°, the air temperature had been a bit warmer. Besides the normal clumsiness and discomfort, wearing the suit meant that I would be unable to reach the upper ejection handle if anything did happen. In the end, however, common sense prevailed. I complied with SOP and donned the wet suit.

After checking in with GCI, I established myself in the prescribed holding pattern. I was flying along – fat, dumb, and happy – when in quick succession, I noticed a bright red and white flash to my right, heard a loud explosion, and felt a tremendous push forward. The flight controls and UHF were immediately inoperative, and the plane began to spin inverted. I was in a poor ejection position – off the seat and nearly pinned against the canopy. Because of the tremendous negative G forces, however, there was no way I could better it.

After attempting several Mayday calls, I reached for the lower ejection handle and attempted to punch out. Unfortunately, I did not have a firm grasp on the handle, and my hand slipped. The second time, I made sure that I had a good grip. As I yanked the handle, I tried to throw my body back to get into some sort of acceptable ejection position.

In a flash I was out of the aircraft and spinning violently as I experienced seat-man separation. The next thing I remember was that I was perpendicular to the risers, watching the parachute canopy deploy. I saw the spreader gun fire and the canopy blossom. The opening shock knocked the wind out of me. Once I was able to clear my head, I tried to assess my situation. I felt OK, but was still trying to regain my breath.

Looking straight ahead, I saw an aircraft in a nose-low, left-wing-down attitude. At first I thought it was my A-4. Then I realized that it was not on fire and was afraid that I had panicked and punched out of a salvageable aircraft. Once I was able to focus my eyes, I realized it was not an A-4 but an F-4. Although confused, I was relieved to see that he was coming back to circle me. I attempted to contact the *Phantom* via my PRC-90 survival radio. I could hear some static, but was unable to receive any voice transmission. After making a couple of calls to let them know that I was OK, I began preparations for water entry.

I replaced the radio in my survival vest pocket and inflated my LPA. It worked as advertised, although the right side of the collar failed to inflate fully due to the restrictiveness of the *Velcro* tape. As I reached back to loosen it, a shot of pain went down my neck and back. For the first time, I realized that I had been slightly injured during either the ejection or the parachute opening.

With the LPA inflated completely, I reviewed my survival procedures for water entry. I decided against deploying my liferaft at that time because the CWU-33/P made even the slightest movement seem like a Herculean task. I decided that as long as my LPA was inflated, I'd have plenty of time to deploy the raft once I hit the water. I then checked for the Koch fittings and found them easily within my grasp. I realized, however, that I still had my gloves on. I stowed them in my survival vest and again reached up and put my fingers near the opening of the release fittings. As I drifted down through a solid undercast and toward the black Atlantic, I thanked God that I had decided to wear the wet suit despite its drawbacks. Once my feet touched the water, I pulled down on the release mechanism, and the chute drifted away about 20 feet behind me.

Continued

*For 2 hours I was lost, and the SAR people had only a general idea of where I was. The only reason the H-46 finally did sight me was by pure chance. The pilot in the right seat happened to look in my direction and saw me floating in the ocean. They never saw any of my flares or other signals.*

Once in the water, I took out my radio to contact the *Phantom* which had been circling me on the way down. I still didn't deploy my raft because I was confident that I'd be picked up soon. The *Phantom* pilot obviously had a good fix on my position and was probably radioing it back to the SAR helicopter. Besides that, I had expended quite a bit of energy because of the wet suit, and I felt exhausted. I decided to lie in the water and rest until I could again catch my breath.

After about 10 minutes, the *Phantom* left but was almost immediately replaced by a C-130 which I spotted approaching my position. He was proceeding directly toward me, so I called him on my radio. As he passed over, I called again to give him an "on top" call. As he turned away, I figured that he would circle my position until the helicopter arrived.

Little did I know at this time that no one was reading me nor did they have me in sight once I entered the water. I was just a black spot in a black ocean. Five or ten more minutes passed, and the helicopter still hadn't arrived. I was getting rather uncomfortable now, so I finally decided to deploy the liferaft. As I was crawling into it, the radio which had been in my survival vest somehow slipped free and fell overboard. I had not ensured that it was attached to my vest by a tether line. I felt sick that the radio was gone, but cheered myself with the thought that the SAR helo would be there very soon.

As time passed, I could not understand what was taking so long. The seat pan had an emergency beacon, and I was sure that everyone would home in on that. I had also dispensed some green dye marker, so I also had a constant visual marker in the water.

I noticed several aircraft in the area, generally circling my position. I attempted to get their attention with my pencil flares, but this seemed to have little effect. I realized I had to make myself more visible, so I reached into my survival vest and took out my strobe light. I pushed the button; it worked for about 20 seconds and went out completely. I always carry two strobe lights, so I was not too worried as I pulled out the second. I became concerned, however, when it failed to work at all. Aircraft – C-130s, H-1s, and H-46s – were continually passing either over my position or within a mile and a half of it, and I could not attract their attention!

By this time, I had been in the water for an hour and was becoming rather anxious. I could not understand why none of the aircraft made an effort to rescue me. I began to think that I might have had a midair and the SAR efforts were being concentrated on the other crew. I still had no idea what had caused my plane to explode and crash.

Finally I noticed an H-46 coming almost straight towards me. It was no more than 100 yards away and approximately 200-500 feet off the water. My hopes soared as I took out a smoke flare to attract his attention. By the time I had popped the flare, the helicopter was nearly abeam of my position. My confidence took a nosedive as I watched him continue toward the coast without acknowledging my signal.

I now became very concerned that things just weren't right. Another 20 minutes passed before a Coast Guard C-130 flew directly over me. I tried to signal him with a pencil flare – again to no avail. At this point, my confidence was at its lowest. Despite all my efforts, no one had spotted me, and I couldn't understand why. I could see the C-130s and H-46s conducting their expanding square search pattern approximately 5 miles to the southeast of my position. I was becoming very cold by this time, but I refused to let myself think of what would happen if they did not find me soon. Instead, I took an inventory of my remaining signaling devices and planned how best to use them once another opportunity presented itself.

Two hours had gone by since I had entered the water when a Marine C-130 passed directly over the top of my raft. I fired another signal flare, but again no acknowledgement. Then it occurred to me that although the liferaft was bright orange and should have been easily visible, my flight suit was dark like the ocean, and my body was covering most of the orange raft. I unrolled the orange edge flaps and began to wave them. The plane began to circle my position, and I thought that someone had finally sighted me. I heard an H-46 coming and shot a flare directly in front of its path. I was overjoyed when the pilot initiated a hovering turn toward me. I popped the night end of my flare to help him with the wind direction and waited until



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he lowered the horse collar. I then abandoned the raft, swam to the harness, and was lifted aboard the helicopter.

It was not until later that night that I found out the full story. The F-4 that had originally spotted me had me in sight until I hit the water. Once I released myself from the chute, I became virtually part of my surroundings. The *Phantom* was low on fuel, so it was forced to return to base prior to the C-130 arriving on station. Although the C-130 crew had a TACAN position, they were too high to see me in the water. In effect, I was invisible. Since I had lost my survival radio, I could not contact them verbally nor could I use the emergency beacon. The radio in the seat pan worked for only 15 minutes before it too succumbed to the elements. For 2 hours I was lost, and the SAR people had only a general idea of where I was. The only reason the H-46 finally did sight me was by pure chance. The pilot in the right seat happened to look in my direction and saw me floating in the ocean. They never saw any of my flares or other signals.

Looking back on the experience, I would like to offer some conclusions and recommendations. The most important and vital point that I'd like to pass on is the importance of that antiexposure suit – providing it's on your back rather than on a hanger in the paraloft. It is very possible that I would not be around today to write this article had I not worn my CWU-33/P. I don't like wearing "the bag" any better than anybody else, and I could have rationalized not wearing it because I was "within gliding distance of land." But look how far my A-4 glided with a Sidewinder up its tailpipe! Anybody that doesn't comply with the letter and the spirit of the 120° combined sea/air minimum temperature rule is literally betting his life that his airplane is going to make it back. Personally, I like living too much to make that bet.

Other comments I'd like to pass on:

- The Navy should double its current efforts to develop an acceptable antiexposure suit which provides protection from the elements while still affording mobility for the pilot. Although the CWU-33/P protected me as advertised, it also effectively eliminated one element of my escape system by nullifying my ability to reach the upper ejection handle. In addition, because of its heavy weight and

restrictiveness, I used twice the amount of energy normally required to perform the simplest of tasks. Floating in the water just served to increase my awkwardness and my expenditure of energy.

- My complacency in thinking that my exact position was known caused me to delay my actions in this emergency. My strong advice is not to delay your survival procedures when faced with any type of emergency situation. Use every means available to you in order to speed your discovery and ultimate rescue.
- I carried two packs of pencil flares with me and used most of them during my time in the water. I was to find out later that although the flares are easily sighted at night, they are difficult at best to see in the day or in poor visibility.
- The strobe lights should have been of much greater value to me. However, despite a recent 90-day survival vest inspection, the batteries were weak enough to go dead once they were exposed to the elements. In this case, I suggest that the Navy revise its standards as to what determines satisfactory battery performance or find some other, more reliable, power source.
- The green dye, although highly visible during bright sunshine, was virtually useless because of the overcast sky that prevailed during my excursion in the Atlantic. Not exposing the orange raft flaps could have been a contributing cause in my delayed rescue. Another way I could have increased my visibility would have been to use the orange-colored side of the solar blanket provided in the seat pan survival kit. By cutting a hole in the center large enough to slip my head through, I could have worn the blanket – serape style – thus offering a large orange target for the SAR crews to spot.
- During the initial portion of my experience, I tried removing my helmet in order to relieve some of the weight. As soon as I lifted it from my head, I felt an icy rush of air pass over my scalp. I realized then that the helmet was helping me to conserve precious body heat, as 75 percent of one's body heat can be lost through the head. I kept it on the remainder of my time in the water. Also, during my ride up the rescue hoist, the helmet served me once again by protecting my head when I was summarily lifted into the underside of the H-46. If I had removed it, I'm sure I would have received a painful souvenir of my first helo ride.
- I now carry the large antiexposure mittens that I had previously thought too large and cumbersome to carry with me in the A-4 cockpit. Although my *Nomex* flight gloves somewhat shielded my hands from the wind, the insulated mittens would have afforded me infinitely better protection against the elements. Toward the end of the 2-hour ordeal, my hands were numb and I was having difficulty manipulating the signal flares. If my rescue had been delayed much longer, I'm sure I would have lost the dexterity necessary to use any of the rescue devices.
- Finally, eat the *Charm* candies provided in your survival kit. Sugar is energy. Energy provides strength and warmth, both of which are highly desirable in a cold weather survival situation.

My purpose for writing this article has been to share the knowledge I gained from my survival experience so others might avoid the pitfalls I fell into. A cold water survival situation is not pleasant, and preparation and advance planning are the best lifesaving techniques you can employ. I sincerely hope that no one reading this article ever finds themselves in a similar situation, but if they do, I just hope that they have prepared themselves. Believe me, the Atlantic Ocean in December is totally intolerant of complacency and unforgiving of error. ◄



*Aircrew Systems Change No. 369 was introduced 11 October 1977 and should provide the solution to the bulk and mobility problems which LT Petykowski encountered. Details of the change are:*

*1. Removal of the Nomex outer shell, which improves arm and upper torso mobility and reduces assembly bulk. The neoprene inner shell provides good flame and thermal protection.*

*2. Removal of the ventilation spaces panels from the neoprene inner shell, which reduces assembly bulk.*

*3. Shortening and customizing the neoprene inner shell sleeves and installation of Nomex cloth sleeves. This facilitates arm mobility, prevents water entry into the sleeves, and provides flame and thermal protection for the arms.*

*4. Installation of any combination of shin, thigh, and pencil pockets to the neoprene inner shell – provides stowage capability (optional). – Ed.*

**Time will erase the painful memory of that mistake you just made.**

**So will the next mistake.**

**Ace L.**

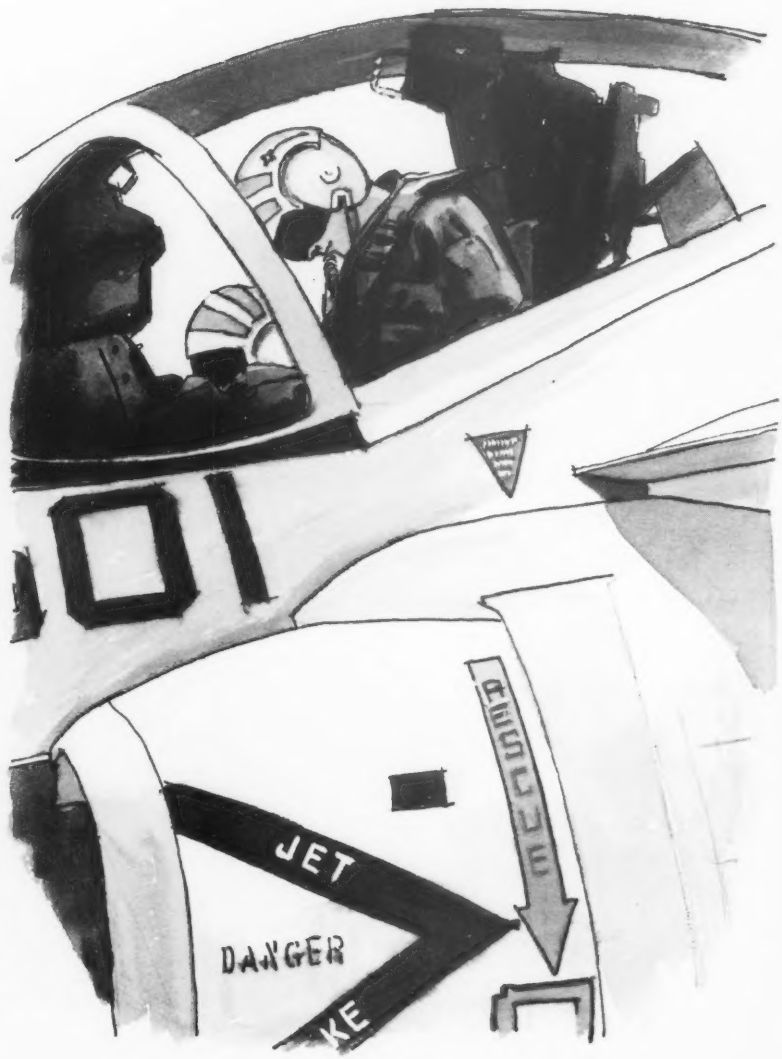
# Bravo Zulu

1st Lt Joe M. Baez, USMCR

AFTER taking off his oxygen mask at FL290 to take a drink of water and before putting it back on, the pilot reached for the relief tube. In so doing, he accidentally hit a switch. Thinking he had turned on the cabin dump switch, the pilot immediately moved the cabin dump switch from the aft to the forward position. This last action dumped the cabin pressure. He immediately tried to put his mask back on, but before he could get it strapped on, he lost consciousness.

Fortunately for the pilot, he was flying an A-6E *Intruder* and had as his B/N, 1st Lt Joe Baez, USMCR. Lt Baez, seeing and realizing what had happened, took control of the aircraft by reaching across from his seat with his left hand and pushing forward on the stick to start an immediate descent. He established a 15-degree dive until the airspeed built up to 480 KIAS. At this point, the B/N pulled back on the stick to bleed off excess airspeed and then set up another 15-degree dive. As the *Intruder* passed 14,500 feet, the pilot started to regain consciousness. Lt Baez turned the aircraft to a heading of 270 degrees to return to Lajes AFB, the point of departure, and leveled off at 10,000 feet.

After 10 more minutes, the pilot had recovered to the point where he was fully aware of what had happened – that he had been unconscious for 2 minutes. The B/N then returned control of the aircraft to the pilot, who made an uneventful landing at Lajes AFB.




After landing, the pilot was examined by an Air Force flight surgeon and was found to have suffered no ill effects.

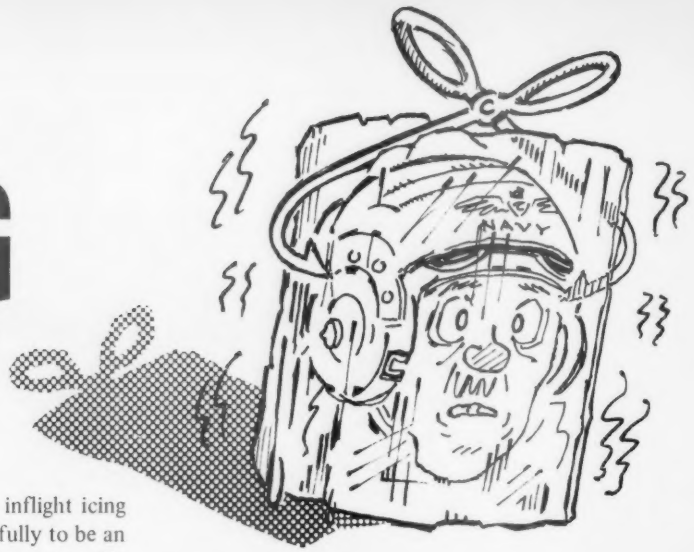
By his exemplary action in an immediate emergency situation, 1st Lt Baez saved the life of his pilot and a very valuable aircraft. His quick thinking not only averted a tragedy, but also showed him to be a true professional.

Well done! ◄

# ICING

## *a subtle hazard*

By LCDR Don A. Mohr
VTC-22

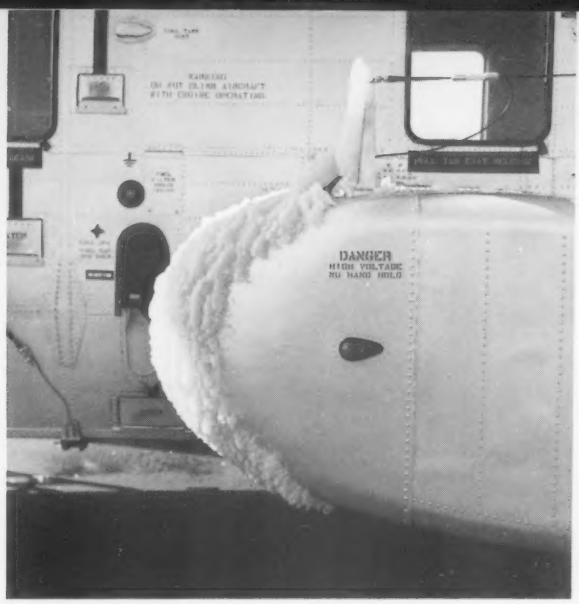



TOTAL abstention from encounters with inflight icing may well be one sure method of growing gracefully to be an old pilot. Achieving both of these objectives outwardly appears simple since NATOPS prohibits nearly all helicopter operations into known or forecast icing conditions where moisture (excluding snow) is present. This requirement, to avoid inflight icing, stems from the fact that helicopters are particularly vulnerable to this hazard, since few helos have effective anti-icing equipment installed or operable.

Historically, the best action if icing is anticipated is timely activation of all anti-icing systems and executing a landing prior to rapid ice accumulation. This action presupposes that the icing hazard is recognized! Icing is most lethal when it strikes quickly and unexpectedly in unforecast encounters during IMC (instrument meteorological conditions).

All too frequently, pilots fail to realize the seriousness that icing presents. In a helicopter, which is unconcerned about increased landing speeds due to wing ice accumulation, what actually is the cause for alarm? Rapid accumulations of rotor blade ice result in severe vibrations and can cause loss of autorotative capability. This fact is particularly frightening since dual-engine failures due to ice ingestion and air starvation have previously been reported. Flight into icing conditions at freezing temperatures with the inlet screens installed on the H-46 (in violation of NATOPS) will air-starve the engines in approximately 3-5 minutes. Of course, the windscreen is valuable as a visual guide to the rate of ice buildup, unless you have windscreen deicing activated. The fact remains, any ice formation on inlet screens cannot be eliminated and can be lethal.

Steadfast reliance on the OAT (outside air temperature) gage's accuracy as an absolute go/no-go instrument for icing should be tempered with caution. There certainly should be reasonable care applied in interpolation of the values to include certain instrument error tolerances and parallax factor. The best course of action is not to continue flight during actual IMC when temperatures are near freezing. Simple descent to operate clear of clouds (and moisture) will increase your icing survival chances significantly if continuation is an absolute necessity. The danger of inflight




airframe ice accumulation is also frequently ignored by the same pilots who know that takeoffs are prohibited with snow or ice on the aircraft. The shedding of any ice buildup which breaks free also poses a severe threat to the tail rotor.

One of the least likely places one might expect to encounter icing is in the temperate climate of the west coast, but icing has been encountered there, as well as by frigid east coasters, who should be more aware of the dangers. The comfortable sea level winter temperatures of the west coast quickly lower to freezing level when pilots climb to altitude – especially at night. Over the past few years, a number of helicopter pilots have found themselves iced up to where they almost fell out of the sky before acting.

For example, one H-46 on a cross-country to the San Francisco area was forced to terminate the flight early when he encountered engine icing at altitude, in actual IMC. A dual-engine flameout resulted because his inlet screens were on. Fortunately, he broke out of the overcast with sufficient altitude to adjust his autorotation and found a spot to land.

Another incident concerns an H-2 pilot and crew who really must live right. On a night flight in IMC, over mountainous terrain, the pilot elected to climb to a higher enroute altitude. The icing he encountered was neither forecast nor anticipated. The buildup was so rapid that severe vibrations were noticed just prior to the loss of both engines. Autorotation on the gages at night, over mountains, with an uncertain ceiling report must lead the list of hairy happenings. Fortunately, he not only broke out of the clouds with maneuvering room, but he also found a lighted civilian field for landing!

Reliance upon forecast icing levels at higher altitudes and planning to operate below the freezing level in IMC caused another H-46 to make an early morning swim call. The pilot was flying at a minimum enroute altitude of 3000 feet and proved that NATOPS was right again – you can't fly in icing with the inlet screens on. He observed near-icing temperature on the OAT gage and saw windscreen ice accumulation which convinced him to descend. The urgency was heightened by his crew chief's report that the engine screens were icing up also. An emergency descent was a step in the right direction, but, unfortunately, a landing could not be accomplished while power was available. While attempting to maneuver back to

Homeplate, both engines ultimately failed and the helicopter autorotated into a river and sank. Takeoff to ditching took less than 13 minutes! That's a lot of experience gained in a very brief period.

There are other conditions involving ice which should be pointed out. What about when everything is going right – like most of the time. You comply with all cold weather procedures, including fueling the aircraft the night before (to preclude condensation) for your early morning flight in clear but freezing temperature. Hangaring aircraft is prudent when anticipating freezing temperatures following a rain or when sleet is forecast. However, beware of airframe icing when respotting wet or sweating aircraft outside warm hangars when freezing temperatures exist. Exposed control linkage and rigging are very prone to freezing solid.

Water trapped in tail rotor blade pockets, due to either tail rotor positioning or plugged drain holes, can freeze and give an unprecedented tail rotor vibration. One pilot had nearly all the rivets on the trailing edge of a tail rotor blade torn out under these conditions. Be suspect if a vibration occurs on turnup and suddenly stops. Skid-configured helicopters have been known to freeze to the ground or to swap ends (a 180 turn) when spotted on icy surfaces.

Consider the impact of ice and cold weather on all operations, and remain aware and ahead of icing hazards. The NATOPS manuals of most helicopter models include the following rules to be observed in cold weather operations:

- Takeoffs are prohibited with snow and ice on the helicopter.
- Flight is restricted in known icing conditions when visible moisture is present, except dry snow.
- When icing is inadvertently encountered, turn on available anti-icing systems and get out of the conditions as quickly as possible.
- Be cautious when operating in temperatures of 10°C and below with visible moisture present, except dry snow.
- Keep a sharp watch for the first signs of ice or snow accumulations around windshield wipers, gun mounts, pitot tubes, wing stubs, etc. Any buildup should prompt a pilot to land immediately. Unbalanced buildups of snow and ice can easily cause structural damage. ◄

The best time to keep your shirt on is when you are hot under the collar.

Ace L.

# MOMENTARY ICING

THE crew of an HH-2D was on the last leg of a ferry flight when the HAC realized he would not be able to maintain VFR flight any longer. He was flying over mountains at night, and the weather began deteriorating.

The HAC filed an inflight IFR plan with Center. ATC cleared him to his destination – about an hour away – at 8000 feet. He departed 6000 and entered the clouds and noted the OAT was between -6°C and -8°C. Shortly after entering the clouds, ice was seen forming on the lower right part of the windshield. Then the crew heard a pronounced buzz, and the helicopter began a 1-1 revolution vibration.

The helo, without any pilot inputs, began a left roll to about 28 degrees angle-of-bank and a slight descent. The HAC stopped the roll but continued a descending turn and broke out into a clear area. He concluded he had incurred blade stall from ice. During the turn, heading and attitude could not be ascertained because of the severity of vibrations.

Suddenly the vibrations ceased, and the pilot who was back in VFR conditions diverted to a nearby base and made a routine landing.

The most probable cause of the unusual vibrations and erratic flight was blade stall. Whether it was caused by icing on the main rotor blades or from an airspeed beyond the normal operating limits or possibly a combination of the two cannot be proven conclusively. The helicopter was flying right at operating limits (120 KIAS, 8000 feet, OAT -8°C, and weighed 10,000 pounds). One supposes that ice could have accumulated on the rotor blades, reducing the stall margin, and then later was thrown off.

The helo crew did not receive reports by other aircraft of isolated snow showers and icing conditions. These had not been forecast along their route of flight. Helicopter crews must be aware of icing possibilities when flying through mountains and be prepared to alter flight routes. Flying into known icing conditions has always been – and remains – a no-no. ◄

# The second firewarning light or

# "What do I do now?"

By Bob Jensen, Senior Engineer
Flight Safety Department
McDonnell Aircraft Co.

Reprinted courtesy of McDonnell Aircraft Co., *Product Support Digest*

IN twin-engine fighters like the *Phantom*, a single firewarning light isn't the heart thumper that it is in a single-engine machine. Not that it doesn't attract a lot of attention and demand rapid action, but there are ways to cope with the problem and bring the airplane home. *Phantom* Phlyers have seen their share of firewarning lights, both false warnings and the real thing. They:

"Idle the affected engine, then proceed to CUTOFF if the light continues or a fire is confirmed."



This should take care of the problem, requiring only a no-sweat, single-engine landing if there are no additional complications. However, one of the rarer added thrills for the pilot is a *second* firewarning light from the other engine bay. Here we have a hopeless situation – fire in both engines and nothing to do but eject, right? Perhaps, but not necessarily, and certainly not before you know for sure what is really going on down there in the engineroom.

**Firewarning Indications.** First, let's consider what the firewarning light is saying. The detection element is designed to pass enough current through an electrolytic salt to start the fire light glowing when a temperature of 766°F is attained on any segment of the fire detection elements. This temperature is high enough that normal engine heat will not cause a warning light, and low enough that a warning comes before major fire damage has occurred. A temperature of 800°F will not cause immediate serious structural damage in the engine cavities. Like the pain in your hand when you touch a hot stove, the fire warning usually comes before serious damage is sustained. So the second firewarning light is not a cause for instant despair.

**Firewarning Implications.** Second, let's examine the history of F-4 accidents where a second firewarning has occurred. (In this part of the discussion, only *firewarning* lights, as distinguished from *overheat* warning lights, are considered. There is a very good reason for this distinction, because a firewarning light reports a 766°F temperature condition *inside the forward and mid-engine cavity,* while an overheat warning light reports a 1050°F condition *outside the engine bay* at the "turkey feathers.")

There are some variations in the double fire light accident patterns, mostly in the time interval between the first and second fire lights. The cases on record where nearly simultaneous fire lights occurred immediately after takeoff almost invariably involved F-4s with *centerline external fuel tanks* installed. Although investigators did not always agree that a leaking centerline tank connection was the cause, the circumstantial evidence is overwhelming.

The few exceptions that involved near-simultaneous dual fire lights had entirely different characteristics. Most importantly, they did not occur just after takeoff. Each of the exceptions also had clear-cut catastrophic failures indicated. In one case, an early configuration titanium first stage engine compressor disc failed, causing major shrapnel type damage and a series of explosions. Another case occurred on centerline rack cartridge firing, when a poorly secured jettison cart housing punched a hole in an engine fuel line in the keel. Another similar case was a result of jettisoning external stores.

But on liftoff, or initial climb after takeoff, a double fire warning with a full centerline tank installed calls for centerline tank jettison, or depressurization by extending the IFR receptacle door/probe. If accomplished promptly, centerline tank depressurization/jettison may end the fire.

**Sequential Warning Lights.** A different situation exists where first one engine fire light comes on, and *following throttle reduction* to IDLE or CUTOFF, the other light comes on. Here we have a definite fire origin within one engine cavity that is transmitting enough heat to the other engine bay to trigger that fire light as well. Does this mean that the fire has spread so that both engine bays are

involved in the fire? Not always; perhaps we can even say not usually. If we consider only firewarning lights again, with no overheat lights illuminated, F-4 history says that only the one engine bay is really involved. Postaccident examination of the engine bays with this condition normally shows little or no evidence of fire in the engine bay that had the second light. The reason for the second light is that sufficient heat from the primary fire was transmitted through the center keel web to heat the fire detection element in the other cavity to 766°F.

In one or two cases, it has been theorized that because right engine bay fire elements are mounted directly to the single titanium keel web above the 83R door, a fire properly positioned in the left engine bay could direct enough heat on the web to cause a right engine fire warning as well. In other accidents with these symptoms, it has been found that hot gas and flame found a path through web openings, such as the centerline bomb rack (Aero-27) access doors, into the other engine bay. Though the damage in the second cavity was normally limited (i.e., scorched paint), the temperature was high enough to cause a fire warning.

The J-79 engine installation uses a large-volume, high-velocity flow of secondary cooling air outside the engine and inside the engine bay. This is provided by the jet pump action of the engine exhaust nozzle during engine operation. Inside the engine bay of an operating engine, and especially during engine acceleration, air pressure is less than in the air outside the cavity. This is how a leaking external centerline tank can trigger one or both engine bay firewarning lights. The leaking fuel is drawn into engine bays, ignited in the afterburner flame at the nozzle, and fire flashes back into the engine bay.

If, however, the pumping action of the engine exhaust nozzle is stopped in flight by engine cutoff, the normally negative relative pressure inside that engine bay becomes positive. Ram air, entering the engine intake, spills through the opened bellmouth into the engine bay. Due to the termination of nozzle pumping and a restricted exit area, a pressure increase occurs in the engine bay. If one engine is idled, a similar but lesser pressure rise occurs in the engine bay of the idled engine. Thus, when one engine is idled or shut down in response to a firewarning light, any opening between the engine bays becomes a "pneumatic tube" to draw the fire into the other side. As engine shutdown cuts off all but residual JP fuel and a few gallons of hydraulic fluid and engine oil, the fire has little chance to seriously involve the second engine bay. However, it will cause the second fire warning.

**Overheat Warnings.** To complete the picture, let's examine the accidents where *overheat* lights were involved. These are indications of high temperature outside the engine exhaust nozzle, where sensors were added to the F-4 to warn of a nozzle flap failure. A single *overheat* light, with no other fire indication, is usually just that – a nozzle flap failure.

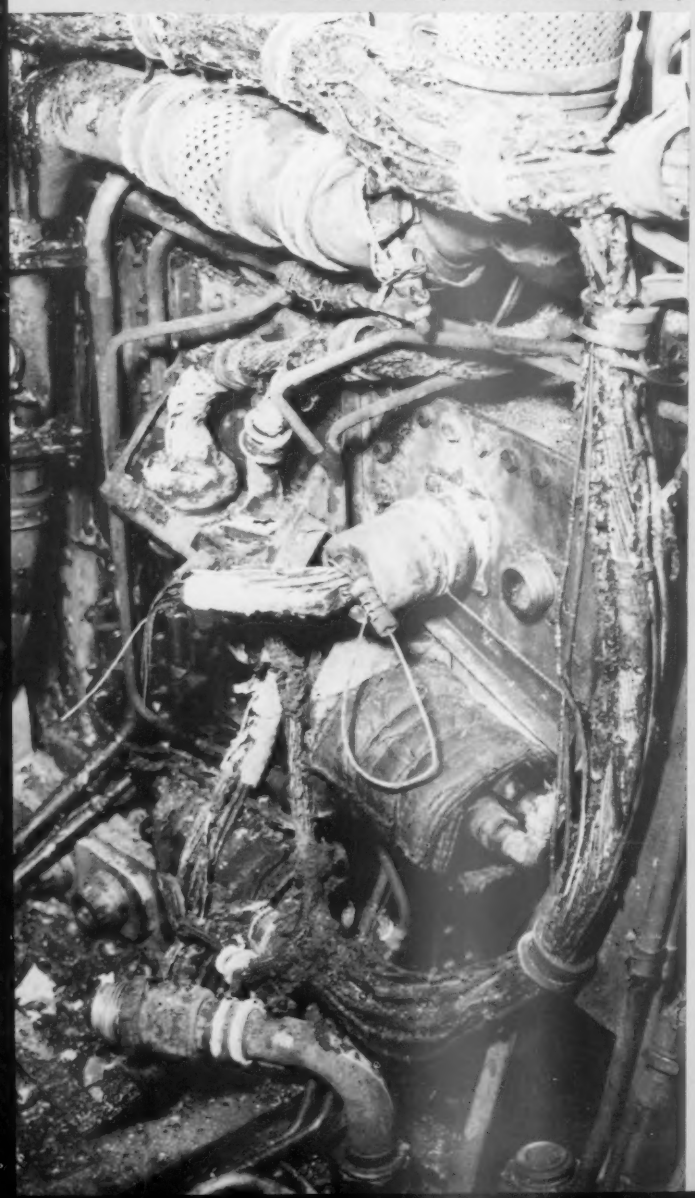
Two overheat lights alone (no fire warning) are a different story – that usually means fuel is burning at the

Two firewarning lights on at the same time is definitely a thrill. But does it mean that ejection is inevitable?

tail in such quantity as to light both lights. An upper fuselage fuel system leak, as from a fuselage fuel transfer line failure or a fuel cell rupture, normally does not enter the engine bays. Fuel streaming aft, from an airframe fuel system leak outside the engine cavity, will not ignite until an ignition source is encountered. Historically, engagement of afterburner has been the most frequent and most positive method of igniting leaking fuel. So, if two overheat lights come on shortly after afterburner selection, probably a major fuel leak exists.

If one *fire* light follows (or precedes) the two *overheat* lights, there is a likelihood that the fuel is originating in the engine bay that has the fire warning, and immediate shutdown of that engine may control the fire. Some types of catastrophic engine failures, however, can rupture a fuselage fuel cell from below, causing an uncontrollable fuel leak/fire from the engine bay. In any fire in which both overheat lights are on, there is a possibility of loss of stabilator control due to fire progression inside the aft fuselage.

There's no question that an engine bay fire existed in this aircraft. Illumination of a second firewarning light, though, does not necessarily indicate that the fire has spread to the other engine bay.



**Using What We Now Know.** The history of F-4 fire accidents is well worth examining for the purpose of learning whether cockpit indications can be used to discriminate between types of fires. This summary is an effort to pass on the knowledge available; however, none of these typical indications can be considered absolute indicators of the fire source.

Even though analysis of fire and overheat warning light sequencing is not an exact science, the record shows that a particular warning light sequence can be meaningful. So, how can a pilot, maintenance supervisor, or mechanic use this information? As a pilot, I would make a mental note that with a centerline tank installed, a double fire light just after breaking ground might be cured by tank jettison, or even by nothing more than extension of the IFR receptacle/probe. Even a single fire light at that point would make me think – "Centerline tank?" I would also make certain that, on preflight, the Aero-27 (centerline) rack access doors are installed and secure. Without becoming complacent about engine bay fires, I might also remember that, statistically, the record shows a single fire light followed by a second fire light after cutting the throttle on the first engine probably means heat transfer from the initial warning area. Completion of engine shutdown as dictated by the first fire light might eliminate both problems. If both lights persist, or the second one goes out and the first remains on after engine cutoff, the odds are good that a utility hydraulic line is the fire source. In several accidents of this type, the fire ran out of hydraulic fluid and went out at about the same time the crew ejected.

In the aircraft maintenance department, the knowledge that keeping the keel web airtight can save an airplane and crew may improve the incentive to watch Aero-27 access doors more carefully. Other keel openings may also be detected that require resealing. Meticulous leak-checking of centerline fuel tanks after installation can also save a crew and airplane. The fact that these tanks only pressurize for transfer after takeoff is the reason a careful leak-check is required *with the tank pressurized.*

Engine bay fires are serious problems in the F-4, and our twin-engine redundancy needs to be protected so that a fire in one engine can be contained and possibly eliminated. Better understanding of the causes and progression of fires may result in saving some aircrews and aircraft. ◄

*Wherein the Editor and Santa Claus engage in a bit of discourse and find incidents that may even . . .*

# Make the ASO smile

*Ed: Santa, what's the good news?*
*SC: My bag is light.*
*Ed: Empty?*
*SC: No. I have two or three.*
*Ed: You have my ear. Let me hear.*
*SC: Two helos and a transport.*
*Ed: Lay it on me.*
*SC: 'Twas many nights after Christmas . . .*
*Ed: No poem. Prose.*

## No Launch

TWO HSL-35 pilots, LT Earl M. Smith and LTJG John P. Smith, strolled out to their SH-2F one night for a local training flight. Their briefing had been a complete one, and both were looking forward to the flight.

They gave the trusty *Seasprite* a thorough preflight, found no discrepancies, and strapped in to aviate. After completing the prestart checklist, they fired up and prepared to engage rotors.

Shortly after the blades started whirling, the aircraft experienced a complete electrical failure. The pilots secured the engines by using the auxiliary battery power, and the blades began to coast down.

Suddenly, LT Smith saw one of the droop stops slip out of position and the blade dropped down from the pack. Quickly he hit the rotor brake and the blades were stopped.

If the blades had been allowed to continue to turn after the blade dropped from the pack, it would have zapped the fuselage. LT Smith's rapid response to a totally unexpected situation, under difficult conditions, prevented a major ground accident.

LT Smith is commended for his quick analysis of the unusual situation and for the correct action taken. Continued

*Ed: Not bad for openers.*
*SC: It pays to be alert.*
*Ed: Substantial damage could have occurred. That's 500 big ones, saved.*
*SC: I don't have that kind to put in his stocking.*
*Ed: What else?*
*SC: Here goes.*

## Electrical Fire

A CREW from HS-15 consisting of LCDR J. W. Puffer and his helpers were on a night IFR cross-country 15 miles south of Savannah. The HAC saw a momentary flash from the caution panel and had a sinking feeling – known by all pilots – at the first moment of trouble.

The pilot's fears were confirmed a few seconds later when his crewman reported an electrical fire in the after cabin. The HAC initially had no lights showing to indicate the problem, except two boost pump lights did illuminate. Boost pump lights?

The generator switches were cycled one at a time. When No. 2 generator was secured, all kinds of lights illuminated. Number 2 generator was turned back on and the caution lights went out. Then No. 1 generator was secured and the panel stayed dark. The crewman, in a voice just a few decibels higher than before, reported that the fire was still burning. He grabbed a $CO_2$ bottle and discharged it on the cannon plug of the generator control panel.

Meanwhile, the HAC declared an emergency with Savannah Approach and requested vectors to Hunter AAF. Approach quickly complied, and a few minutes later the HAC made an approach and landing at Hunter – *still on fire!* As soon as he landed, the HAC shut down in the grass off the runway. The crash crew had been alerted and was on the scene. The crash crew fired more $CO_2$ until the fire went out.

When investigators were able to take a look, it didn't take them long to find out that a cannon plug had shorted out at the generator control unit.

The crew coordination exhibited by LCDR Puffer's crew was exemplary. The helicopter suffered only limited damage – although it was only a whisker from being destroyed.

*Ed: Not bad, old man.*
*SC: Watch your tongue.*
*Ed: How many megabucks?*
*SC: Two point eight.*
*Ed: If that bird had continued to roast, I hate to think of the holocaust that could have occurred.*
*SC: Last one.*

## Cool Heads

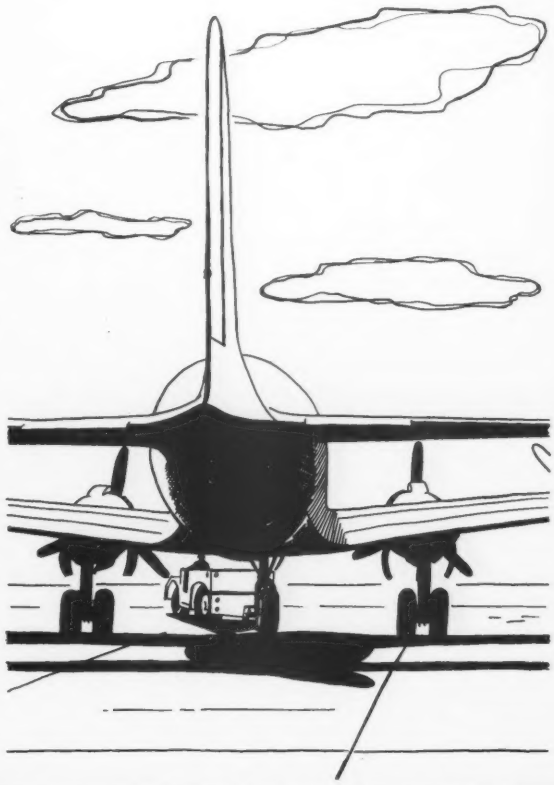
LCDR D. J. Hackett of VR-53 was the transport aircraft commander of a C-118 inbound one rainy night to NAS Memphis on a scheduled flight. He had a batch of passengers aboard and some cargo.

They were running a tad late, so when they broke out of the goo, about 2000 feet, on their approach, the aircraft commander elected to proceed straight in VFR. The copilot was in the left seat shooting the approach and landing. He greased it on after crossing the threshold on speed.

The copilot called for reverse pitch on the props, and the flight engineer armed the reverse lever. The copilot pulled the throttles into reverse, and all four blue lights came on. (That's good.) He added power normally to 20-25 inches when suddenly all four engines quit at once. (That's bad.) The quiet was deafening.

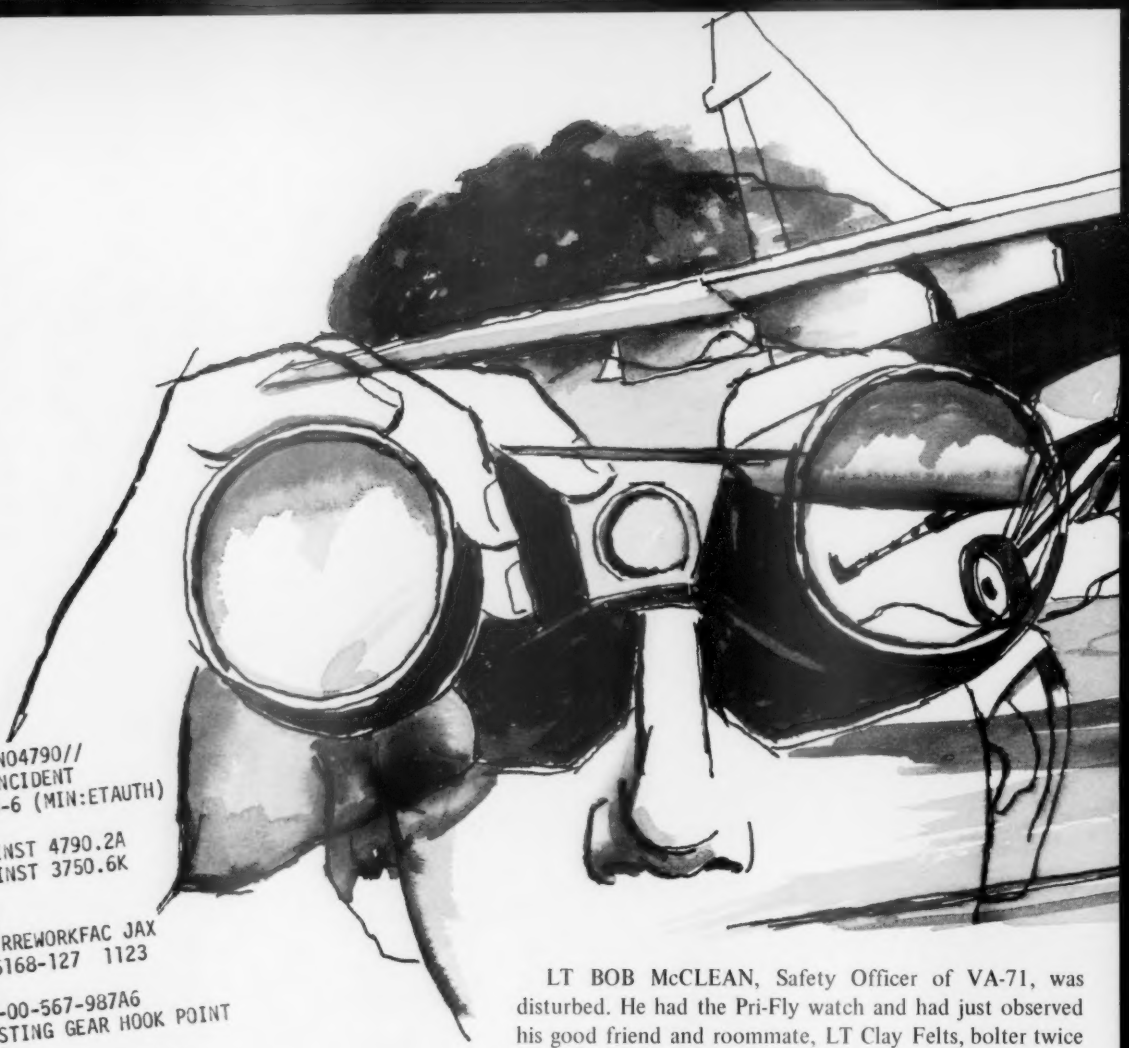
Both pilots knew that nosewheel steering wouldn't last long, but they knew the accumulator would provide sufficient pressure for braking action on normal rollout, and as a last resort they still had air brakes. The copilot, undistracted by the blackout, kept the C-118 on the wet runway and stopped with 3000 feet remaining. An alert tower operator sent help, and the aircraft was towed to the line.

All attempts to find the reason for the sudden stoppage of all four engines or to duplicate the incident failed. It was suspected that the engines loaded up, due to high outside air temperature, and quit because the mixture became too rich. The generators dropped off the line and an excessive load was placed on the batteries. ◀





*Ed: Well, that makes me feel pretty good . . .*
*SC: I have to be going.*
*Ed: . . . to know there are pros out there.*
*SC: On Dancer . . .*
*Ed: Safe trip home.*
*SC: . . . to all a good night.*
*Ed: Have a great '78.*



UNCLAS // N04790//
AIRCRAFT INCIDENT
OPNAV 4790-6 (MIN:ETAUTH)

A. OPNAVINST 4790.2A
B. OPNAVINST 3750.6K

1. VA-71
2. NAVAIRREWORKFAC JAX
3. PH3-6168-127 1123
4. 7269
5. 1234-00-567-987A6
6. ARRESTING GEAR HOOK POINT
7 -13 N/A
14. Government Furnished
15 - 19 N/A
20. 13000
21. REINSTALLED CORRECTLY, RETURNED TO SERVICE
22. A. AIRCRAFT LAUNCHED AS LEAD AIRCRAFT IN A ACM/DCM FLIGHT (FLIGHT PURPOSE CODE AA6). AIRCRA SCHEDULED AND RETURNED TO CV FOR NORMAL CASE I RE HOOK SKIPPED 3 AND 4 WIRES ALTHOUGH THE PASS WAS AIRCRAFT HOOK SKIPPED 2,3, AND 4 WIRES ALTHOUGH WITH NO EVIDENCE OF LATE LINEUP CORRECTIONS TO I FROM PRI-FLY REVEALED THE AIRCRAFT HOOKPOINT WAS BINGOED TO BEACH WHERE HOOKPOINT WAS INSTALLED C SUCCESSFULLY BACK ABOARD.
B. VISUAL INSPECTION
C. NONE
D. IN-FLIGHT
E H N/A
I. LT McCLEAN, VA-71 SAFETY OFFICER, DEPL
J. A-7E BUNO 156789
K. N/A
L. LT C. FELTS, 214-46-0687
M FOXTROT/GOLF
N. VA-71 14-771
O N 26'41" E 28' 55" 1135 INDIA

LT BOB McCLEAN, Safety Officer of VA-71, was disturbed. He had the Pri-Fly watch and had just observed his good friend and roommate, LT Clay Felts, bolter twice even though his hook had been in the landing area. Clay had an excellent reputation as a carrier pilot, and in fact, stood well up on the squadron landing efficiency board. Therefore, after the second bolter, LT McClean requested the binoculars to look over Clay's aircraft. LT Felts was just too smooth a pilot to induce two consecutive hook-skip bolters.

As requested by Pri-Fly, LT Felts took his A-7 up the port side of the ship, tower high. Bob trained his "eyes" on the *Corsair* for a close inspection. His discovery was not good.

"Boss, 404's hook point is on backwards! I think we'd better bingo him to the beach. We've got a maintenance det there that can put it back on the right way."

"How in the hell can you install a hook point backwards?" thundered the air boss. "What were the pilot and plane captain looking at during their preflight? The Old Man's gonna be mad as hell that we gotta bingo that bird. You know how he feels about diverts."

With a final diatribe, the air boss picked up the

# DON'T EMBARRASS THE COMMAND

By Richard P. Shipman
Approach Writer

conspicuous red phone that connected him directly with the captain of the ship.

"Yes, sir, we're going to have to bingo him. Yes, sir, I know you don't want to bingo any aircraft, but the only other choice is the barricade.

"I don't understand how it happened either, Captain. OK, I'll pass the word to bingo him right away. Yes, sir, I'll have the squadron skipper meet with us in your cabin at 2200."

The red phone was returned to its resting point awaiting the next crisis.

When the Raspberry net reported 404 safely ashore, LT McClean went below deck to the readyroom, upset and unhappy. He was very upset that maintenance had installed the hook point incorrectly and just as disturbed that nobody in the safety review chain had caught the error. The collateral duty inspector missed it, the plane captain missed it, the pilot missed it, and nobody else in the flight noticed anything unusual. Lots of people had an opportunity to catch this dangerous error, but nobody did. Bad business. The squadron's excellent safety record could easily be cut short by slip-ups like this.

Beyond this, LT McClean was unhappy because the squadron had really fallen on its sword. He had a lot of pride in the squadron – as did most members of "The Demons" – and the professional reputation of the squadron meant a lot to everyone in VA-71. Besides, they were well in the running for the "Battle E" award. This kind of publicity they didn't need.

Knowing this, LT McClean tried to phrase the first draft of the required incident report to minimize the embarrassment to his command. But every way he tried, it still looked bad. "Well," he reasoned, "not much choice but to pull a Howard Cosell and 'tell it like it is.' As the old Murphy's law goes, 'If an aircraft part can be installed incorrectly, someone will install it that way.' If a Sierra Hotel maintenance department like ours can do it, chances

are excellent that someone else will, too. Maybe this report will spare them the same problem."

The safety officer soon realized that he needed more information before he could write a complete report. He left the readyroom and proceeded to his stateroom to look for LT Felts. There he ran into Clay, who had just returned from the beach with his aircraft fixed. Since it was close to chow time, they decided to talk over dinner. After going through the line in the dirty shirt wardroom, the two pilots found a relatively clean place to sit down, and Bob started talking.

"How'd you miss that hook point, Clay? Wasn't it obvious on your preflight?"

"Not really. The aircraft was spotted tail-over-water, so I couldn't preflight the tailpipe area or look into the hook well."

"I can see that, but I wonder why the plane captain didn't catch it when you dropped the hook after taxiing out of your spot?"

"Well, to be perfectly honest, the air boss wanted me to expedite launch since the catapults were being starved, so I didn't stop for the hook check. I wanted to impress the boss with our squadron's can-do spirit."

The jello and cookie for dessert didn't appeal to Bob, so he left Clay to finish dinner while he went down to maintenance to investigate. He found the maintenance control chief in the maintenance admin office.

"Chief, how'd that hook point get put on backwards, and why wasn't it caught by the CDI?" Bob asked.

"Well, sir, it shouldn't have happened. But Brown was assigned the job – he's a new man, you know. It looked like such an easy job that he couldn't screw it up, so Phillips, his supervisor, went to chow. He'd been working for 9 straight hours and needed some food and a break badly.

"Right about this time, Ops called, saying we had an add-on hop that would make the squadron look good if we would cover it. Well, the only comer we had was 404, so we started hustling to get the paperwork in.

"Then, to top it all off, hangar deck started screaming to get the bird topside so it could be spotted. I guess somewhere in between, the CDI never got done. It's bad business, but it happens sometimes when you operate like we've been."

Later that evening, with all the facts in his head, LT McClean finished his rough draft of the incident report. "Same old story," he thought. "Operational commitments, rush for launching, add-ons to make the squadron look good, overworked and undermanned maintenance department, breakdown in communications – all the factors were present in this incident that have been identified time and time again as causes of accidents. Well, we were lucky this time; no accident. At least it will make a good incident report and maybe spare some other squadron the problems I'm going through now – or even more important – prevent an accident."

With the rough completed and routed, Bob went to the readyroom to catch the evening movie already in progress. His entrance went largely unnoticed, as most of the squadron was captivated by an Italian western movie, known in readyroom circles as a "max ordnance flick." The junior ensign was posted at the blackboard, logging the body count as bad guy after bad guy fell victim to the blazing .45 of the hero. Bob settled into his "Rocket 8" readyroom chair and was soon joining in with groans and boos.

The readyroom went silent momentarily as the black-hatted villain lined up the hero in the crosshairs of the telescopic sight of his high-powered rifle. Lo and behold, he shoots and misses, prompting the hero to leap from his horse, draw his .45, and, while suspended in midair, gun down the villain 500 yards away. The ensign logged one more dead while a hail of ballcaps, pens, NATOPS Manuals, and other fixtures of the readyroom not nailed down bombarded the screen in protest. When the dust settled, the phone was ringing, belatedly answered by the hatless duty officer.

"Yes, sir, he's right here. I'll send him down."

"Bob, the CO wants to see you in his room right away."

Bob exited with the body count at 48 and proceeded to the CO's room on the second deck. He knocked upon arrival.

"Come in, Bob."

"Hello, skipper. You wanted to see me? I'll bet it's about the incident report. Is something not clear?"

"Not really, Bob. It's a good report with the facts pretty much straightforward. But, you know, I don't think we should send it out."

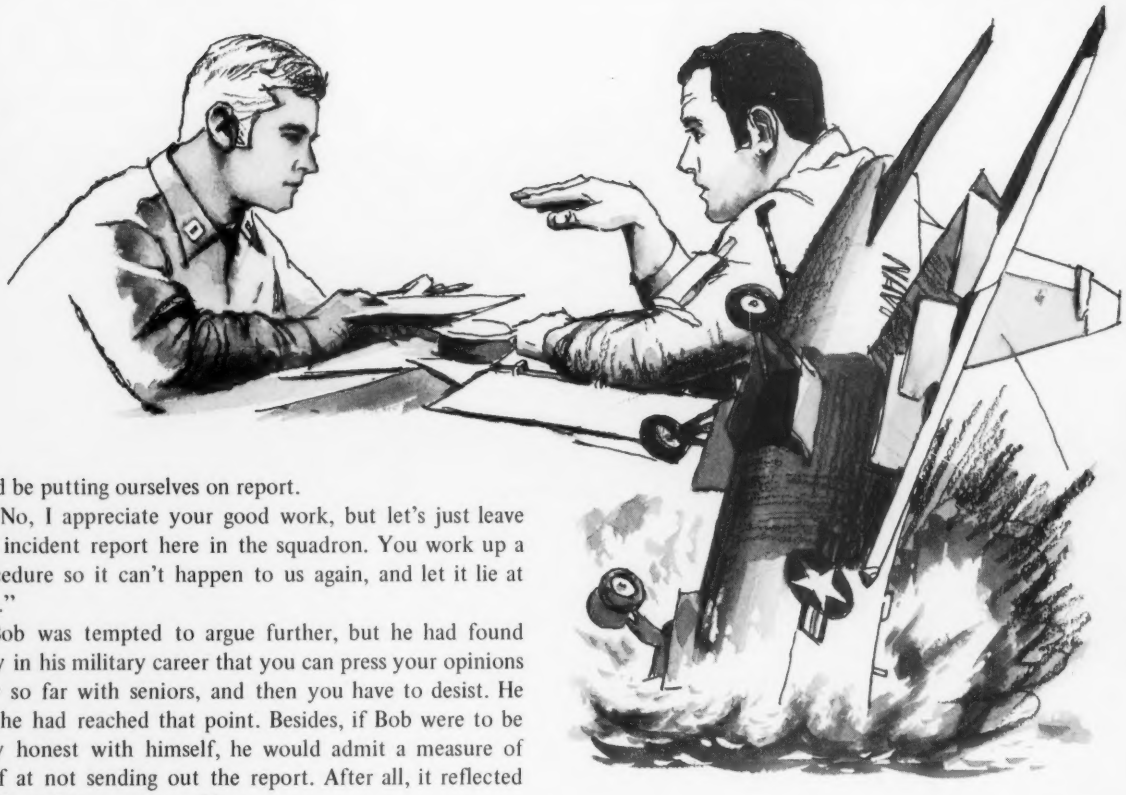
"Do we have a choice, skipper? OPNAVINST 3750.6 says it's a requirement. Even more important, it might save somebody else from doing the same thing and having an accident."

The skipper contemplated the overhead momentarily before he replied.

"Let's be realistic, Bob. If we publish this, we'll embarrass the command. We'd be hanging out our dirty laundry for the entire Fleet to see. And you know how much everyone wants that 'E.' "

"But, skipper, this report might save someone else from making the same mistake and maybe even getting hurt. It's our professional responsibility."

"Oh, I think you're exaggerating. It was really a fluke incident that wouldn't happen again in 100 years. It won't do anybody any good – and it will just make us look bad.



We'd be putting ourselves on report.

"No, I appreciate your good work, but let's just leave this incident report here in the squadron. You work up a procedure so it can't happen to us again, and let it lie at that."

Bob was tempted to argue further, but he had found early in his military career that you can press your opinions only so far with seniors, and then you have to desist. He felt he had reached that point. Besides, if Bob were to be truly honest with himself, he would admit a measure of relief at not sending out the report. After all, it reflected poorly on him as safety officer.

Walking back to the readyroom, Bob could not help but think how ironic the whole situation was. "If only we weren't so good, maybe we wouldn't have to be so afraid of ever looking bad. Even great squadrons have people who make mistakes. After all, that's what a squadron is – humans – and humans err. What do 'they' expect? Why can't we be mature enough to 'fess up' to our errors so that others can learn?"

There were so many conflicting thoughts going on in his mind that Bob could not enjoy the rest of the movie, even though the body count stood at 76. Frustrated and upset, he returned to his room.

It was but 5 weeks later that LT McClean was reading the message board and ran across a preliminary accident report on an opposite-coast A-7 squadron. The message read, "On normal night recovery, aircraft engaged No. 4 wire. After 15 feet of wire pullout, hook disengaged from wire. Aircraft continued over the angle and impacted the water inverted. No ejection was observed. Alpha damage, Lima injury."

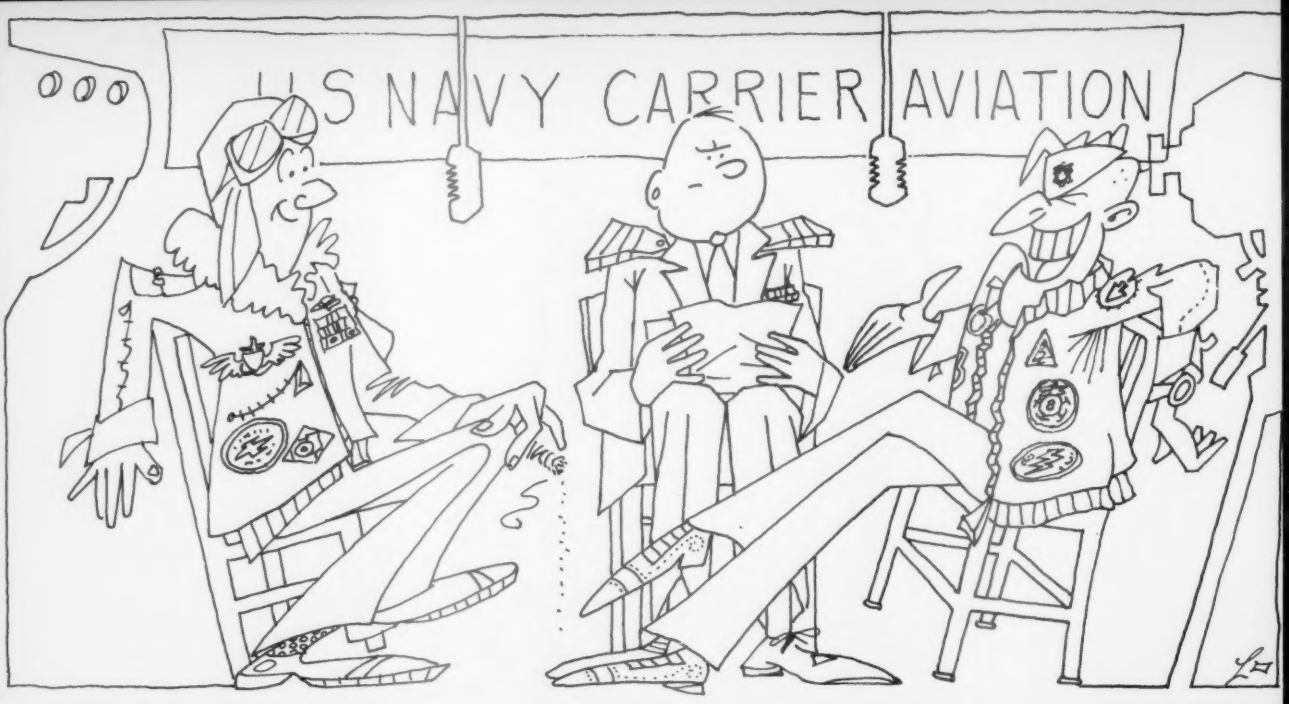
Bob could feel a knot tightening in his stomach and a cold tingle come over his entire body. Was the hook point installed backwards? Nah, probably a fatigue failure of the hook point or shaft, or a failure in the crossdeck pendant. But a nagging doubt kept after him.

One month later, the complete investigation summary was on the message board. The aircraft wreckage had been salvaged, and there in the conclusions, loud and clear, came the statement Bob didn't want to read.

"The hook point was found installed backwards on the hook shaft. There was enough protrusion from the back side of the hook point to engage the wire momentarily. When the hook finally slid off the wire, the aircraft had decelerated to a point where it could not regain flying speed."

LT McClean's legs were shaky and he felt lightheaded and dizzy as he walked back to his room. The price that squadron had paid so that his squadron didn't have "to be embarrassed" was the highest extracted in naval aviation. No – his squadron had not been embarrassed; it had been shamed. ◄

*This is a fictional article about a problem which, unfortunately, is not fictional. – Ed.*




# MONDAY NIGHT MEATBALL

By LTJG Dan Carroll
RVAH-7



Let us turn our 8G, "I'm-a-fighter-pilot" wristwatches ahead about 5 years or so and pretend that Congress now owns all the broadcasting rights for television. And to prove that some things never change, let's say that the Congressional budget cannot afford the payment of the expensive salaries and commercials associated with the earlier often viewed entertainment entries for Monday night. So, guess where the media moguls turned in order to fill this void? Ah, yes, to the U.S. Navy, and specifically, carrier aviation. So, with the Captain's permission, let us make our way up to the bridge, or rather through the bridge, for that is where they built The Booth.

And guess who works inside The Booth? Why, none other than the world's foremost expert on chatting, catting, and trapping – Howard Copilot. Assisting in The Booth are the color commentators – the true experts. One, an ex-fighter pilot, a veteran of extravagance versus experience, is Frank. Frank doesn't have a last name; seems he never could remember it. HOCO (Howard Copilot) says that he forgot it because no one ever asked him.

The other color man is middle America's favorite, Alex Unable, an ex-Marine aviator whose gear-up landing technique afforded him the highest boarding rate ever recorded in naval aviation.

The cameras are roaming from readyroom to readyroom, portraying the various prelaunch briefings being conducted. A closeup of one fledgling young lad's face reveals his despair caused by his futile attempts to repeal the ensign eligible rule for night flying. Later on, after the action has begun, the PLAT camera (now with a color feature, soundtrack, and cockpit recorder for selected mutterances) serves as an instant replay device for the home audience. There are even commercials featuring Alex Unable modeling the latest line in formfitting *Nomex* underwear.

Rechecking our wristwatches, we find that there is some time to kill before the opening cat-off. Our intrepid trio uses this time to explain a few things pertinent to the broadcast to the home audience.

*Howard:* One thing I'd like to point out, Frank, is this: night carrier flying is virtually the *same* as day carrier flying, save for that ominously iridescent orb in the sky – the sun!

*Alex:* Bull!

*Frank:* Aha now, Howard. I'll have to think about that one.

*Alex:* Think, schmink.

*Howard:* That's right, Frank, you think about it. Given all things being equal, and I'm specifically addressing such things as the aircraft not being all bantered, badgered, and bandaged up; that the pilots' eyes are perfect; that his brain is mustered on station.

*Alex:* That his toupee hasn't fallen over his eyes, right Howard?

*Howard:* As I was saying, given all things being equal, you only require two things to land on a carrier.

*Alex:* Yah, an airplane and a carrier!

*Howard:* I note with due concern the inability to safety wire your mouth, Alex. Allow me to continue. The pair of items I was referring to are a reference to glide slope, more commonly known as the Fresnel Lens, and a reference to centerline, more commonly known as lineup. And to no one's surprise, I'm sure neither one of these gadgets, Frank, is wired in series with the sun. So, really, you are not using anything different to land at night than you use to land in the daytime!

*Frank:* But, Howard, what about depth perception, or the times when there isn't any moon or visible horizon?

*Alex:* Yah, you know what the moon is, Howard? Speaking of heavenly bodies . . .

*Frank:* Easy, Alex, there might be some lookers-on from the family hour programs.

*Howard:* Back to the germane, lineup and glide slope remain unaffected by your feeble attempt to remove as much darkness as possible from a night carrier approach, Frank. Flying the ball and hawking centerline do not require any extraneous visual cues. If one is doing his carrier approach properly, he is checking centerline – whether it be a yellow and white painted line, or centerline lights – with his peripheral vision, moving only the eyes and not the head. And the focal point of his scan is the ball. It is imperative that the ball be flown to touchdown, so that the pilot must look the ball off the mirror. The arrestment should be a surprise and not an anticipated experience.

*Frank:* Howard, it sounds like you're saying we should treat a carrier pass as a learning experience.

*Howard:* Right you are, Frank! The learning experience you made mention of should be treated as a process, a continuing, ongoing process, and not a final product.

*Frank:* Do you mean then, Howard, that whether it be a touch-and-go or an arrested landing, that we as pilots should challenge ourselves to learn something new on every pass?

*Howard:* Right again, Frank. Remember this: whether you full stop or go on your merry way, it is what one did to get there, not what occurred after one's arrival, that counts.

*Alex:* OK, wise guy. What about bolters? I mean, that's something that happens after you arrive.

*Howard:* I refer your ignominious inquiry to OPNAV Form 3760/2, Alex.

*Alex:* Huh?

*Frank:* Howard is referring to yellow sheets, Alex.

*Alex:* Oh, yah. Well, come to think of it, they always appeared kind of off-white to me (chuckle, chuckle).

*Howard:* Burdening the audience with tales of your personal problems of self-control does little to foster the discussion of bolters, Alex.

*Frank:* What Howard is getting to, Alex, is that not every bolter is the result of a below average pass. Sometimes a bolter may result from an average or even an above average pass, such as when a hook skip occurs or wires are missing.

*Howard:* So much for the meager explanation of terms. Listen, everytime you fly an OK pass, you have positively reinforced the conceptual learning process, which is a combination of the sensory functions and motor skills used to get aboard. And everytime you fly something other than an OK, you have unlearned a very involved dynamic order in one easy lesson. If the mind field is doing its proverbial thing, an unrepressed memory will be able to debrief yourself much sooner than the LSO.

*Frank:* Howard, do you mean to say that we as pilots should force ourselves to go back over every phase of our approach and ask ourselves, "Was I flying the ball to touchdown and hawking lineup with my peripheral vision?"

*Howard:* Right, Frank! And he should be able to analyze every deviation from a perfect pass that he made so he can learn from it and not make the same mistake again – or at least strive not to. To get the carrier pass down pat in the daytime, to accumulate a continuity is to form an entire behavior process!

*Alex:* I get it – a sort of "how to act in the groove" routine.

*Howard:* Alex, I'm amazed with the alacrity and accuracy of your most recent statement. Let me hasten to include

that if one allows his concentration and vision to be clouded with such things as the shade of darkness outside, or the diminishing returns of the once visible horizon, or any of the multitude of mitigating maladies that are used to effect the negative motions contrived to describe night carrier operations, in essence, one is depriving himself of the total positive concentration required to perform a carrier approach properly.

*Frank:* Does that mean it takes a very strong, positive psychological effort to do it right, Howard?

*Alex:* Correct-oroo, Frankypoo. And, if you have pent-up frustrations bothering you, hey, they *are* going to bother your carrier approach.

*Howard:* I couldn't have said it any better myself, Alex.

*Alex: [Sarcastically, with a smile]* But you didn't say it, Howard.

*Frank:* I think we all agree that if you are one to erupt emotionally inside a cockpit, the place *not* to do it is on the glide slope.

*Howard:* It's time now to pause for a closing word from Frank on behalf of A.P.E.S. (Aviation Psychology for Endangered Species).

*Frank:* Thank you, Howard. I'd like to take this opportunity to address something that is very often overlooked in our trade. The people at A.P.E.S. would like me to emphasize that we in the carrier aviation business do our thing because we like it. Lord only knows it's not the money. There's not enough oil in Arabia to pay someone to land 25 tons of aircraft at speeds of 165 mph on a boat that advertises a runway that is 30 feet wide and a few hundred feet long. Evil Knievel doesn't even do it! But we're not daredevils – we are *professionals.* We like to fly on and off of aircraft carriers, and we are good at it. As a matter of fact, we are the best in the world. There is a lot to be said concerning human factors when dealing with aviation, and in the not too distant future, the people at A.P.E.S. believe we will witness the emergence of the aviation psychologist joining up in tight parade alongside the flight surgeon to assist aviators in maintaining and improving their psychological and mental assets.

*Howard:* That's it for Monday Night Meatball, folks. Tune in again next time when we will bring you the excitement of being low in the groove, the thrill of arrestments, and the agony of soft cat shots. ◄



# TORCHBEARERS to the rescue

At 0930 one morning, Tigertail 010 was on station 180 miles northwest of Sicily, controlling S-3A *Vikings* on a surface search mission. LT Poli, the pilot of the E-2C, overheard a call for help on Guard from the pilot of HW-01, an H-46 helo. The helo had experienced a transmission failure and had been forced down on a beach in southern Italy. Radio communications were established between the E-2C and HW-01, and it was determined that all seven persons aboard had escaped the incident uninjured, but assistance would be required from the detachment located at NAF Sigonella.

LT Poli turned south toward Sicily and attempted to raise NAF Sigonella on UHF. LTJG Beamer, the E-2C's Combat Information Center Officer, relayed the situation to the USS KENNEDY. Communications were finally established with Sigonella by contacting VR-24 on their base radio frequency. Meanwhile, LTJG Beamer requested HW-01 to turn on their IFF transponder. Using the IFF squawk, the E-2C determined the exact location of HW-01. At this point, NAF Sigonella lost all electrical power, again disrupting communications. VR-24 promptly turned up one of their C-2s and reestablished communications with the E-2C using the C-2's radios. The E-2C then used its AUTOCAT capability (automatic communication relay), which allowed the pilot of HW-01 to talk directly to NAF Sigonella. Another helo with parts and manpower was dispatched from NAF Sigonella and was vectored to HW-01 by the E-2C.

This incident reflects outstanding heads-up work from the "Torchbearers" of VAW-125 and VR-24 and demonstrates again the outstanding capability the E-2C aircraft has to handle many different missions. ◄

# WELL DONE!

LT Weatherspoon
and
LTJG West
VF-32

LT Steve Weatherspoon, pilot of Gypsy 201, performed a control check in his F-14 *Tomcat* just prior to a normal Case II catapult launch. Following launch, the landing gear was raised and a right clearing turn initiated. But while attempting to level the wings, the pilot was unable to move the control stick to the left of the centered position. The aircraft continued in a steep right bank, and the nose began to fall through the horizon — at approximately 200 feet AGL! LT Weatherspoon countered by applying full left rudder and selecting maximum afterburner. LTJG Jerry West, the RIO, monitored airspeed, altitude, flaps, slats, and spoilers, while continuously evaluating the ejection envelope. (Command eject was selected in accordance with squadron SOP.)

The *Tomcat* slowly recovered to a wings-level, noseup attitude, and the roll SAS was secured (without noticeable effect). At 15,000 feet, the flaps were raised using the emergency-up method.

During the subsequent control check, it was determined that only one-third stick throw to the left was available, and the left spoilers would come up only about 1 inch. Cycling the hydraulic pump spoiler control circuit breaker had no effect on the controls.

With darkness approaching rapidly, a decision was made to attempt a Case III approach (straight in). The approach and landing were successful. Postflight inspection revealed a fuel drain fitting in the front cockpit console which had caused binding of control rods.

LT Weatherspoon and LTJG West are commended for their presence of mind and flying skills. Their knowledge of two recent similar F-14 control problems made them aware of the potential for disaster in this situation and helped prepare them to handle the emergency. Furthermore, their adherence to proper procedures undoubtedly aided them in recovering their aircraft. Had they attempted a hot, wrapped-up clearing turn, the results may well have been different. The aircrew's sound judgment and professional airmanship saved a valuable aircraft and prevented possible injury to themselves. Well done!

# A SURVEY ON CARRIER

By LT Bill McMurry
VF-51

WHAT affects carrier landing performance? This question in some form or other has entered the minds of every naval aviator, landing signal officer, and commanding officer since the very beginning of naval aviation. The pilot who is not really sure why he becomes suddenly disoriented during an otherwise normal approach and ends up with a bolter has often done a good deal of soul searching to explain his lapse of scan or motor skills. Why should a usually "rails" aviator end up with an unsatisfactory approach bordering on unsafe? Are there existing parameters which if adhered to may improve landing performance? In an attempt to answer these and other questions, Fighter Squadron FIFTY-ONE initiated a Carrier Landing Survey. It asked pertinent questions of VF-51 aviators during shipboard operations while embarked on a 7-month Mediterranean deployment.

A form (Fig. 1) was given to each pilot immediately after landing. The squadron duty officer passed out the form to the pilots and had them fill it out on-the-spot, with the exceptions of questions B.3 and additional comments he might have in B.5. The pilots were instructed to recall as precisely as possible the answers to questions in part A (before flight), even though these questions were answered after flight. The squadron considered having the pilot fill in part A prior to takeoff, but this was discarded because it took too much of the aircrew's time and was too much of a burden on the SDO. The anonymous nature of the survey was stressed to encourage complete honesty in answering these questions, as some rather sensitive information – personal and professional – was requested from the participants.

The forms were collected daily. A total of 578 usable forms were compiled for the final results, based on 988 landings during the cruise (736 day and 252 night). Many forms were rejected for lack of completeness. Since anonymity was assured, no method of following up an incomplete form was available. Also, many crews simply did not have the time to fill out a form for every flight. Aircrew interest was high, however, and the forms were filled in whenever humanly possible. Finally, forms were not required for the last six flying days of the cruise, since the squadron felt 578 forms was a reasonable sample. The number of complete forms was also considered adequate for drawing some general results.

# LANDING PERFORMANCE

Carrier Landing Survey:

**A. Before Flight**

1. When did you last sleep (hours ago)?
   For how long?
   Do you feel sufficiently rested? Yes/No
2. When did you last eat (hours ago)?
3. When did you last fly?
   Did you trap then? Yes/No
4. Do you feel proficient at flying around the boat? Yes/No
   If no, please comment:
5. How would you classify your emotional state?
   A. Very Good  B. Good  C. About Average
   D. Slightly "Down"  E. Very "Down" or Unhappy

**B. After Flight**

1. Unusual circumstances/emergencies:
   During this flight I encountered (circle one):
   A. Major emergency requiring immediate landing.
   B. Major emergency requiring immediate action, but not immediate landing.
   C. An emergency that affected the landing performance of the aircraft.
   D. Some emergency/system malfunction that did not affect landing performance.
   E. A minor system malfunction.
   F. None.
2. Flight Info:
   Day/Night  IFR/VFR  Duration
3. What was the grade of your pass? (Include WO's & Bolters)
   OK  OK  (OK)  WO  C
4. What do you think your grade should have been?
   OK  OK  (OK)  WO  C
5. Comments:

Fig. 1

The forms were grouped according to the *grade assigned the first pass* for the flight. In other words, a waveoff, followed by a perfect pass, was grouped with other waveoffs. It was decided that the information should be compiled for the "first look" at the ramp, not any second times around.

The groups were designated as follows: OK, (OK), OTHER. The "OTHER" category, in order to get a reasonable sample space, was comprised of no-grades, bolters, waveoffs, and cuts. That is, the "OTHER" category was made up of any pass not considered average or better. The "perfect pass" category was not considered, as only one OK was flown during the entire cruise.

Having been grouped accordingly, the questions requiring numerical answers were averaged, and those requiring answers by letters or Yes/No were computed by percentage chosen for each choice.

To clarify some of the possible questions that might

arise from such an undertaking, a few basic definitions are provided:

**Grade of Pass**: The NATOPS Manual: *Landing Signal Officer* (pg. 9-1) gives the following definitions for recording comments on each approach during carrier operations.

| Symbol | Meaning |
|---|---|
| WO | Waveoff |
| OK | Perfect pass |
| OK | Reasonable deviations with good corrections |
| (OK) | Reasonable deviations |
| – | Below average but safe pass |
| C | Unsafe, gross deviations inside waveoff point |
| B→ | Bolter |

The air wing LSOs during FIFTY-ONE's deployment gave the following grades and point values to the symbols shown above in order to determine a landing point average for individual pilots and whole squadrons.

| Symbol | Grade | Point Value |
|---|---|---|
| OK | OK underlined | 5.0 |
| OK | OK | 4.0 |
| (OK) | Fair | 3.0 |
| – | No grade | 2.0 |
| B→ | Bolter | 2.0 |
| WO | Waveoff | 1.0 |
| C | Cut | 0.0 |

**Proficiency**: Pilots were asked to comment on their proficiency during shipboard operations. This question is subject to much debate since there are few tangible ways to measure such a parameter. Mainly, pilots were expected to answer this question based on how confident they felt during these operations.

**Emotional State**: Again an abstract element. This question was inserted merely to obtain the most fundamental of indications (if, in fact, any surfaced) as to how any emotional conditions might affect landing performance. It was not intended as an in-depth psychological study of naval aviators. (The outside world seems to think we're all crazy anyway.)

**Duration of Flight**: Although the question was originally designed for the actual duration of the flight, it soon became apparent that a more significant way of approaching this question would be to compare full-cycle flights with those flights which lasted less than a full cycle (yo-yo's, maintenance test flights, emergency landings, etc.). The designated cycle for the cruise was 1.5 hours. Therefore, any flight lasting 1.5 hours or greater was considered a full-cycle flight, and any flight lasting 1.4 hours or less was considered in another category.

In addition to definitions, some rather basic assumptions are necessary. Deviation from these assumptions was observed on many occasions. However, "everything evened out" overall, and the following assumptions were considered acceptable:

- The LSO grading criteria was consistent.
- The pilots answered part A of Fig. 1 as closely as possible as to how they *really* felt before flight.
- Aircrew interest was high and thus ensured the honesty of the answers provided.

Well, after all the preceding assumptions, definitions, and verbiage, some results are in order. Figure 2 gives the averages and percentages from part A (before flight) of the questionnaire; Fig. 3 from part B (after flight).

The results pretty much speak for themselves and tell us a lot we thought we already knew. However, a few surprises came from the survey. First, it is interesting to note the percentage of pilots who disagreed with the grade assigned them by the landing signal officer. Twenty-six percent of the pilots who flew OK passes thought they were not. In some cases, pilots had thought they actually flew no-grade or below average passes, and were in fact awarded above average grades. This, combined with other percentages of disagreement about grades assigned, leads one to believe there is a certain amount of difference of opinion or perception between pilot and LSO about what constitutes an acceptable, average, or above average pass.

The percentage of pilots who did not feel sufficiently rested and yet flew anyway is considered high. When observing the (OK) category, nearly one out of every five pilots flew when he didn't feel sufficiently rested. Also regarding crew rest, it is of note that in all cases, the average amount of sleep was well below the 8 hours generally considered sufficient for a good night's sleep.

Now, some general conclusions that we drew from this information. These may not necessarily be valid Navywide, but based on the data gathered, they applied to the pilots of VF-51 for this deployment.

1. Pilots flying OK passes, in general, allowed less time to elapse between last sleeping and flight.

2. Feeling nonrested during shipboard operations did not necessarily mean a below average or no grade pass would follow. The category with the greatest percentage of pilots responding "no" to the rested question was (OK) – not no grade – as might have been expected.

3. Pilots flying OK passes allowed more time to elapse between their last meal and flight.

4. Proficiency, or confidence, plays a significant role in the flying of an OK pass. This was certainly expected; a pilot who is confident of his abilities will likely perform better than one who is not. However, it is also significant that 20 percent of the pilots flying OK passes did *not* feel

Fig. 2: Results of Survey for Part A.

Before Flight

| Question/ Grades | OK (338 landings) | (OK) (170 landings) | Other (70 landings) |
|---|---|---|---|
| 1. Last Sleep: | | | |
| Hours ago | 5.75 | 6.97 | 6.62 |
| Duration | | | |
| Hours? | 6.79 | 6.50 | 6.81 |
| Rested | | | |
| % No. | 13 | 18 | 14 |
| 2. Last eat? | | | |
| Hours | 5.44 | 4.84 | 4.12 |
| 3. Last flight? | | | |
| Days ago | 2.77 | 2.97 | 2.64 |
| 4. Proficient? | | | |
| % No. | 20 | 35 | 33 |
| 5. Emotional State? | | | |
| % A. | 29 | 22 | 14 |
| B. | 37 | 31 | 30 |
| C. | 29 | 34 | 39 |
| D. | 4 | 13 | 17 |
| E. | 1 | less than 1% | less than 1% |

Fig. 3: Results of Survey for Part B.

After Flight

| Questions/ Grades | OK (338 landings) | (OK) (170 landings) | Other (70 landings) |
|---|---|---|---|
| 1. Unusual Circumstances | | | |
| % A. | less than 1% | .5 | less than 1% |
| B. | less than 1% | .5 | 1 |
| C. | less than 1% | 2 | 9 |
| D. | 6% | 4 | 7 |
| E. | 24% | 24 | 13 |
| F. | 69% | 69 | 70 |
| 2. Flight Info: | | | |
| % Day | 83 | 69 | 61 |
| Night | 17 | 31 | 39 |
| % IFR | 14 | 22 | 24 |
| VFR | 86 | 78 | 76 |
| % Full cycle | 87 | 83 | 78 |
| Other | 13 | 17 | 22 |
| 3. Grade Assigned: | | | |
| % Agree | 74 | 66 | 76 |
| % Disagree | 26 | 34 | 24 |

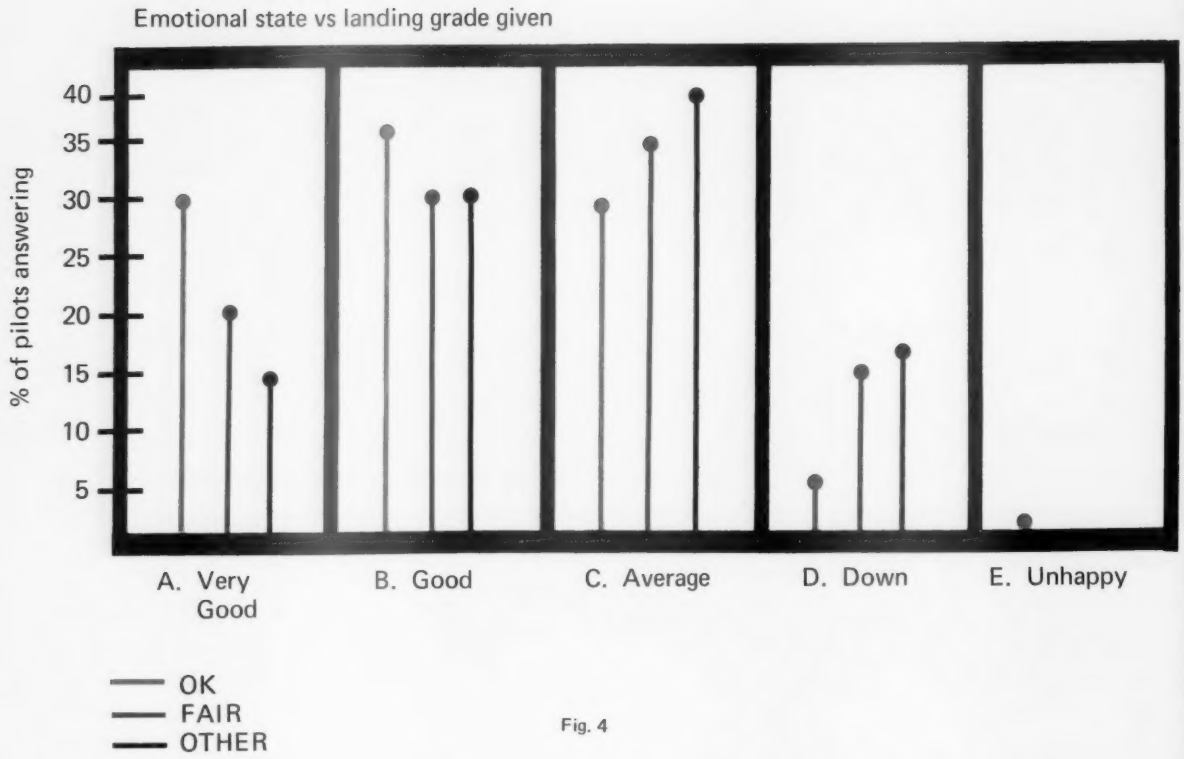



Fig. 4



proficient during shipboard operations.

5. In general, it appeared that the manner in which pilots answered the emotional state question was directly related to the grades of their pass.

Figure 4 helps illustrate this. Note that a decrease of "good spirits" occurs with downward grades, and an increase in "feeling bad" or "average" occurs as well. However, it must again be mentioned that these questionnaires were filled out after flight and not before. A pilot who knows he flew a good pass can definitely have his spirits raised, and the converse is true as well. A more meaningful result might have been obtained had the participants answered questions before flight.

6. As expected, a greater percentage of non-OK passes were flown at night and/or in IFR conditions. This is something we've always known. Aircrews are more comfortable flying in day-VFR conditions than at night . . . an understatement to say the least. However, an interesting point is the discrepancy between non-full cycle flights as compared to grades. A significant difference existed in the percentage of non-full cycle flights that terminated with "other" type approaches.

**Remarks.** This survey is a preliminary look at factors that might help pilots to know a little bit more about themselves and what conditions might affect their skills in that most demanding task of naval aviation – carrier landings. The questions asked were arbitrary and the data analysis crude. However, VF-51 believes that carrier landing performance during Fleet operations has never been addressed as directly as it has been here.

A more detailed study of the data and the possible interrelations between grades and the questions involved should follow.

Finally, an invitation is offered to all aircrews for suggestions as to the feasibility of such studies and, if practical, what type of approach should be used. Hopefully, in addition to the results just given, some other factors can be identified that will help aviators to achieve their continuous goal – an OK-3.

*An important factor in improving carrier landing performance is being aware of what you are doing wrong or what factors contribute to a poor pass. The survey did a great deal to raise the squadron's level of awareness and increase their thinking about their carrier passes. Thus, this survey, or something similar to it, has merit based on this fact alone, even if the statistical results are less than totally conclusive. Should other squadrons want to conduct studies of a statistical nature, the statistical analysis capability at the Naval Safety Center would be enthusiastically provided. – Ed.*

# PROFESSIONALS AT WORK

IN three recent incidents of complete engine failure with prop seizure, Uncle Sam, the taxpayers, the insurance companies, a bunch of NOKs, and the pilots had a lot to smile about.

Capt Doug Hamilton, USMC, noticed zero RPM on his tachometer. Diagnosing a tach generator failure, Capt Hamilton turned toward Choctaw OLF and commenced a climb for a PEL (precautionary emergency landing). Enroute, the oil pressure dropped to zero and the engine began to vibrate and run rough. Moments later, it seized, with the prop coming to attention! Realizing he would not make his planned high-key position, Capt Hamilton then executed a flawless straight-in approach to an off-duty runway despite the unusual glide ratio and the lack of flaps or speedbrake.

LTJG John Abbitt observed his RPM fluctuating and asked his student if he was responsible for the fluctuation. When he received a negative reply, he took control and attempted to stabilize the fluctuations. Applications of throttle and prop had no effect, and the oil pressure had dropped to zero. Enroute to high key, the engine began to vibrate, run rough, and backfire. The flames from the backfires convinced LTJG Abbitt that his trusty steed was on fire, so he proceeded with the NATOPS engine-fire-in-flight procedures, shutting down the engine. Between high and low key, his engine seized completely, bringing his prop to a standstill. Recalling Capt Hamilton's incident, LTJG Abbitt then modified his PEL in order to compensate for his lost hydraulic system, and made a perfect no-flap, no-power *night* landing.

LT Herb Hess aborted his basic instrument hop when he observed a sump light at 15,000 feet. Descending toward Middleton OLF, all was normal until 8000 feet when, without warning, his prop also stopped with only a mild thump as its death rattle. LT Hess called on the previous experiences of his squadronmates and turned a hairy situation into a routine event. LT Hess' actions, like the others, certainly went a long way toward preserving a 2½-year, 79,000-hour, accident-free record for VT-6.

These "pros" all demonstrated outstanding airmanship, cool thinking under pressure, and a thorough knowledge of aircraft systems. The fact that they learned from the "prose" of others, from NATOPS, from the squadron safety program, and from similar, previously reported incidents proves once again that superior skills are best complemented with a *communicating* safety program. ◄

LTJG John Abbitt

LT Herbert I. Hess

Capt Douglas M. Hamilton

# Letters

## Flight Gear Costs

*Washington, DC* – Bravo to LT E. E. Coris for highlighting the dilemma confronting COs on how best to pay for improved protective flight gear in his cogent letter "What Price Safety?" in the AUG '77 issue of APPROACH.

As Fleet concerns for better looking and more comfortable personal equipment become more outspoken and the new or upgraded requirements are generated for safety, emergency protection, and survival, costs to procure such items will almost invariably escalate. Notwithstanding any product improvement in materials or design, inflationary costs have and will continue to contribute greatly all the way down the line. Shouldn't squadron funding allocations take this into consideration?

In the case of the leather jacket – probably the only distinctive piece of flight gear the Navy can boast of – the facts indicate a relatively stable cost to the user. In 3 years from July 1974 to the October 1977 projected cost of $49, the price will have risen only $6.40. We had to change from imported goatskin to domestic cattle hide, but we still have a leather jacket for under $50.

Speaking from the acquisition and logistics support side, both the *Nomex* underwear and winter flight jacket make sense. The *Nomex* underwear was developed to replace the special *Rhovyl* (PVC) type, which couldn't be laundered aboard ship. The *Nomex* is long-wearing, replaces two other types, is procured for both USAF and Navy, and provides substantially improved fire protection, especially when worn with the flight suit.

The *Nomex* winter flight jacket was jointly developed by the Navy and USAF to meet increased fire protection requirements. U.S. Army adoption is also expected, which will hopefully reduce procurement costs by standardizing on one tri-service jacket.

Lionel I. Weinstock
Crew Systems Division
NAVAIRSYSCOM

## The Squadron Works Hard, Too

*FPO, New York* – I take personal issue with the article "The Air Department: Unsung Heroes of the CV" in the AUG '77 APPROACH. The flight surgeon has a well-taken point, but I think his comparison of ship versus air wing is not only unfair but shows that he may lack as much knowledge of an air wing as he claims we lack of the air department.

My men do not simply go ashore when the ship is in port. Aircraft must be washed, turnups must be done, and maintenance continues. Granted, if we are in a port where flyoffs can be made, the work is done ashore. But nonetheless, it is done.

Also, please remember that the cold cat shot or broken arresting wire is very real to me. While I may not physically work on the gear, I am the one who physically receives the end result. Until one has experienced the night cat shot or the approach to the ship in fog, rain, or high seas – and done so continuously – one cannot know the mental strain.

I am well aware of how critical that man's job is – but remember, his job is fairly safe. I know of no green shirts shot down in Vietnam or any who have had to wrestle with an emergency situation to save a multimillion-dollar aircraft and maybe a few lives.

I will be the very first to echo the feelings that V-1, V-2, V-3, and V-4 crews work hard . . . but they do not work harder than my men, and their mental strain will never equal that of my aviators. The air department works hard at its job. My squadron works hard at its job! We are all one Navy, and we don't work at the expense or leisure of others. The jobs differ in requirements, and neither should be pitted against the other.

CDR T. L. Nelson
XO, VA-192

**• Capt Caudill's point was not that the air department works harder than the air wing, only that they receive less recognition for their hard work. His article was an attempt to equalize that recognition.**

## NATOPS: More or Less?

*NAS Norfolk, VA* – Good grief, Charlie Brown, what ever happened to moderation? Capt Sullivan and LT Parra have taken what appears to be the opposite extremes in their articles about NATOPS ("A Better Approach to NATOPS Checks" and "The NATOPS Octopus," SEP '77 APPROACH). Capt Sullivan advocates specific operationally oriented NATOPS checks in order to prevent the abuses he equates to short-notice boondoggle-buddy conducted-cursory-but-required NATOPS checks. Not being familiar with the average marine aviation outfit, I'll accept his analysis of their NATOPS program.

Every Navy squadron I've been in or close to has had a program which required a once a year NATOPS regimen. This normally began with a written exam (open- and closed-book) followed by a flight check

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scheduled well in advance. And since when are NATOPS evaluators "specifically restricted from assessing tactical competency or flight techniques"? In accordance with the general requirements for designation as aircraft commander, Second Pilot, *et al*, as listed in OPNAVINST 3710.7H (General NATOPS), "tactical employment of the aircraft and all associated equipment in all tasks of the unit mission" shall be demonstrated in order to be qualified for designation. It therefore does not appear to me that just because the aircraft NATOPS Manual does not include tactical doctrine, a NATOPS flight and written exam is forbidden from evaluation in that area.

At any rate, we've been giving NATOPS checks for years that were tailored to the individual based upon experience, time in model, designations, etc. To do otherwise or to attempt to give every pilot the same checkflight without regard to those factors would be foolish. We should remember that NATOPS is a tool, not a club, and that we should benefit from each checkride, not approach it like the guest of honor at a plank walking party!

Now for LT Parra, it appears that he approaches NATOPS like it was The Blob, and the additional information added to the manuals each year is going to eventually ooze us to death if we are not careful. I do not understand anyone who does not appreciate additional information about his aircraft. A professional knows as much about his profession as he can. Sure the NATOPS manuals have grown greatly in the past years, but how many of us know as much about our aircraft from the new, fat manual as we should have known from the old, thin manual. Most are still not as good on just the emergency procedures as they should be, all that other data not even considered.

I think that part about "compliance with the stipulated manual procedure is mandatory" is where the lieutenant thinks his authority as an aircraft commander is being undermined. OK, let's follow this line of thinking and see where it goes: I look in my H-2 manual and I see that during a normal approach I should be at 65 knots and 150 feet of altitude when I turn into the wind from the 180-degree position. If I go with mandatory procedure, then anytime I make a normal approach I'd better be at 65 knots and 150 feet every time, or face the consequences. None of those straight-in normal approaches either! Come to think of it, I'd better call all of my approaches "abnormal approaches" because I can't trust that altimeter or airspeed indicator to be good to one foot or one knot. Enough already!

NATOPS is a tool, not a club, and we should benefit from each checkride. Remember, everyone, standardization is the name of the game because it promotes safety in our operations and allows us all to benefit from the past errors of our fellow professionals. The NATOPS manuals give us the standard by which to gage our performance towards obtaining that standardization. As usual, the success of the program rests on the folks using the tools provided. Inquisition techniques, or simply abandoning the system as being too stifling, is not the way to go. Intelligent utilization of the manuals and the program as a rule by which to measure our professional performance in relation to the established norm is what I've seen being done most of the time. It is the real reason the NATOPS program is a boon to naval aviation.

LCDR M. G. Cox
FASOTRAGRULANT

*FPO, San Francisco* – The article written by Capt Sullivan deserves some thought and discussion. It was appropriate that LT Parra's article on the NATOPS octopus follow his proposals.

What is *right* about Capt Sullivan's article is that we must avoid flight evaluations which do not force the evaluee to display a satisfactory level of knowledge on all germane aircraft systems and emergency procedures. Additionally, the scenario must be realistic and the aircraft FSC (Full Systems Capable). Another thing which is right is that we must never allow personal relationships to influence the objectivity of the evaluation.

There are also a few things *wrong* with the article's thrust, as pointed out by LT Parra. We must diligently avoid the inclusion of a tactics check with a NATOPS evaluation. The second thing I take issue with is the concept of using NATOPS as a yardstick of "crew ability." NATOPS seeks to standardize and reach a norm of performance, not create a competitive arena or seek innovative tactical displays. The adjective grading criteria currently used could use revamping, but I would avoid any stigma of failure or marginal performance to those who QUALIFY but fail to achieve 4.0. Exceptional or marginal performers should be reflected in the narrative comments set aside for the instructor. Recommendations for additional instruction may be included in this portion of the evaluation as well.

As to the "Buddy System" which apparently exists in Capt Sullivan's community, I would suggest that the CO ensure that he vests only those officers and NCOs deserving of the special trust and confidence which NATOPS instructor connotes. If his men cannot administer the program in both spirit and letter, replace them – now!

As to the suggestion that we have external evaluators, I think I can say with certainty that no unit commander would ever willingly accept the burden of an additional Wing or Group Big Brother watching over him. Standardization is best monitored at the squadron level with type commander qualified instructors to assist the squadron CO. NATOPS works pretty well without a watchdog above the CO. If the squadron commander fully supports the program and puts his best people in the job of administering it, it will work. So if we are looking for ways to improve NATOPS, start in-house first. A little imagination and lots of command support will provide solutions to all the problems Capt Sullivan noted.

LCDR C. R. Cramer
VP-1 Safety Officer

## Re "Grades for Helicopter Pilots"

*FPO, New York* – LT R. Jaeger's article on helicopter pilot performance grading in the JUN '77 issue was extremely interesting. He has attempted to give the helicopter pilot an objective to attain in his landing performance – something that has been lacking ever since the helicopter was put on a small ship.

However, he has considered landings outside the envelope a positive factor in performance. I am sure that the LSOs in the fixed-wing community do their best not to allow landings outside the wind, pitch, and roll limitations for a particular airplane, much less make it a positive factor in grading criteria. One must be extremely careful in condoning operations outside the published operating envelopes. If they are too restrictive for the operational requirement, then a message stating the limitation and its consequences should be directed to the appropriate type commander. It is not the fleet pilot's tasking to expand operating envelopes.

LCDR R. Parkinson, USN
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# approach

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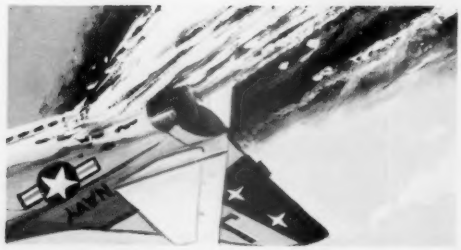

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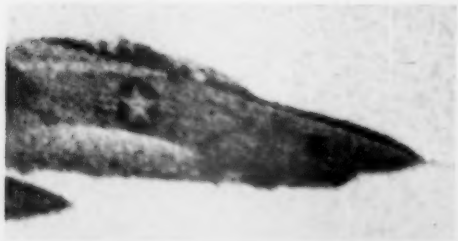

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FRONT COVER/For most of us, the Christmas season means home with family and friends. For others, the vigilance continues. Photographer unknown.

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# Santa as seen by. . .

**Medical Officer:**
First we've got to get on a good diet and above all knock off these night hops.

**Admin Officer:**
Sorry about that, Nick, we're on port and starboard so no leave till after New Year's.

**Maintenance Officer:**
Sled runners, harness and struts we've got, but replacement reindeer parts . . .

**The Plane Captain:**
Everybody else has Christmas off, but no, I've got to stick around and polish this dumb sleigh.

**The LSO:**
OK, Santa baby, let's take it around one more time and this time do something about that red landing light.

**His Wife:**
How come you're never home for Christmas?

**The Taxi Director:**
Guide you into position, I'll do, give you a choice parking spot, I'll do, but clean up after 8 lousy reindeer—never.

# EVERYTHING BUT AIR IS

Idea contributed by AQ2 George Christensen